FEBRUARY, 1951

Industrial FINISHING

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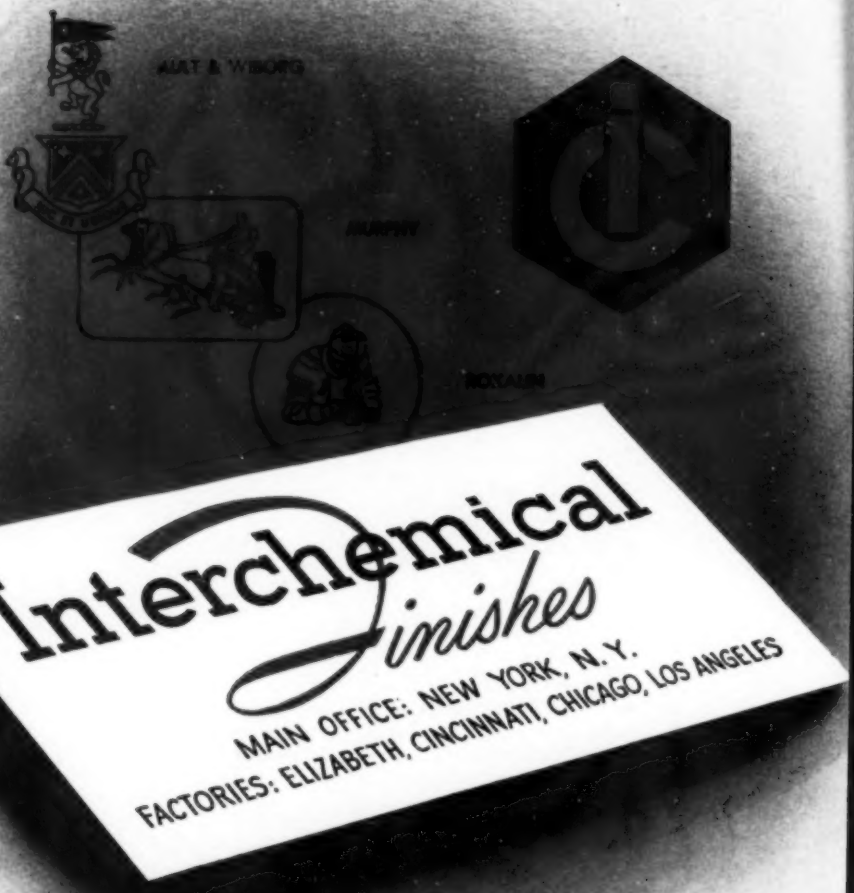
Undercoats . . . Varnishes . . . Lacquers . . .
Enamels for Metal . . . Plastic . . . Wood

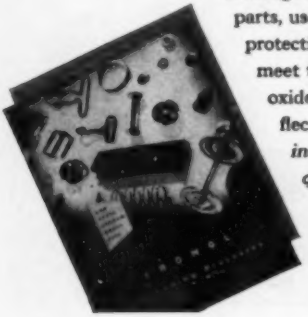


AULT & WIBORG, MURPHY, ROXALIN, AND IC ARE TRADEMARKS OF INTERCHEMICAL CORPORATION

GUN AND PISTOL PARTS COURTESY HIGH STANDARD MANUFACTURING CO.

Millions of Guns...

ammunition shells, cartridge clips, shoe eyelets, buckles, buttons, harness hardware, radar parts, used in World War II, received these government-approved, protective black finishes. Enthone Ebonol blackening processes meet today's Army, Navy and Air Force specifications for black oxide coatings on steel, copper, brass and zinc . . . for wear, reflectivity, saltspray, and weathering. NEW EBONOL Booklet *including detailed operating instructions, sent free on request. U.S. Patents*—2,364,993, 2,460,896, 2,460,898, 2,481,854. Canada, 463,852.



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The Outside Story of Ward Dove Tone Modern

Clean Modern lines and a special Dove Tone grey finish have established this Ward bedroom suite as a best seller. Individual finishes like Dove Tone are an important factor in creating outstanding furniture lines with individual character. That is why sales wise manufacturers call on the finish experts in our modern studios to create practical finishes that sell!

The Better the Finish,
the Better the Buy

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GRAND RAPIDS, MICHIGAN
***Makers of the Famous* Guardsman Finish**
and Guardsman Cleaning Polish

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Incorporated
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Indianapolis 4, Ind.
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Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

Contents

Random Comment on the Industrial Scene 4
Finishing Military Aircraft (Part II) 22
How Simplification Cuts Costs in Finishing Hot Water Heaters 38
Speedy Production Setup for Painting Small Parts 48
1951 Furniture Show 56
Short Cuts in Making Screen Process Stencils 69
Letters from Readers 72
Questions and Answers 84
Materials; Supplies; Equipment 88
Booklets; Circulars; Catalogs 106
Editorial 112
"Classified Advertising" Section 122
Advertisers Index 124

McCaffrey Joins Masury 46
Industrial Safety Equipment Association Meeting 46
Navy Marine Paints 50
Silicone Resins Used in Finishes, Polishes 50
Fitzsimmons, Factory Representative, Moves 52
Enterprise Paint Mfg. Co. 52
Western States Lacquer Corp. Appoints New Lab. Chief 52
"Al" Stresen-Reuter Becomes President of Company 70
Finishing Fine Medals 80
M. J. Fernan, Sales Manager, for Dolan & Co. 104
What Tall Oil Is 105
Michigan Abrasive Co., Detroit, Announces Personnel Changes 120
Fluid Abrasive Spraying 121
Maas & Waldstein Celebrates Its 75th Anniversary 121
Western Metal Show 122
Herman Hardesty Represents Star Chemical Co. 122
Yarnall Sales Convention 122
Corrosion Engineers Meet in N.Y. 122

FEBRUARY, 1951
Vol. XXVII, No. 4

ABCA

A monthly magazine for finishing room and paint shop foremen, production superintendents, chemists, purchasing agents and company executives of industrial plants where production cleaning and finishing are major operations in the manufacture of parts and products.

★

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27 TWENTY-SEVENTH YEAR OF PUBLICATION

Aluminum production will climb in 1951 to over 1,600,000,000-lbs., within 10% of the peak year during World War II, Richard S. Reynolds, Jr., President of Reynolds Metals Co., predicted recently. Primary aluminum output has increased so sharply during recent years that the 1951 production will be double 1946. Further expansion of capacity, already agreed upon, will enable the three producers to achieve a rate of 2,200,000,000-lbs. a year in 1952, a 50% jump over 1950.

Despite the substantial increase in supply, the total military and civilian demand in 1951 is expected to be still greater. In contrast to the situation prevailing on the eve of World War II, aluminum has become a standard and preferred material for a wide range of essential civilian uses.

* * *

Emergency Lamp. A new portable light for Civilian Defense emergencies which provides 80 hours of continuous light on each battery charge, has been announced by Carpenter Mfg. Co., Somerville, Mass. Designed for use in defense plants and for use in emergencies by police, fire, first-aid, rescue, demolition squads, etc., this Civilian Defense Light (Type CDU) is powered by a heavy duty rechargeable long life battery.

A special 2-filament bulb furnishes work or rescue light for 80 continuous hours on one filament—much longer if used intermittently—or a higher power floodlight for 20 consecutive hours on the second filament. A thumb-operated 3-way toggle switch controls both filaments. A substitute reflector provides a powerful mile range searchlight, when needed. The light has a shatterproof lens.

* * *

Cladmetals. The need to conserve metals has brought favorable attention to cladmetals, the use of which cuts consumption of critical metals and spreads the supply.

Cladmetals are the result of permanently bonding together two metals so that the best qualities of both metals are in the final metal material. As an example, in Rosslyn Metal a copper core is bonded between surfaces of stainless steel. The result is high test conductivity with corrosion-resistant, hard surfaces that neither of the two metals could prove singly.

Extensive production expansion, already underway, will increase the supply of cladmetals for civilian and military use. American Cladmetals, sole company devoted entirely to production of cladmetals, and Alan Wood Steel Co., expanded facilities in 1950. American Cladmetals will continue expansion in 1951. Others are expecting greater production.

* * *

Bonding Rubber to Metal. The current issue of Rubber Developments, a quarterly prepared by The British Rubber Development Board and issued here by the Natural Rubber Bureau,

(Continued on page 7)

OLIVE DRAB

Gloss Semi-Gloss Lusterless

ROT INHIBITING SEALERS
RUST INHIBITING PRIMERS
SYNTHETIC ENAMELS
LACQUERS & THINNERS

"Certified" To Meet All GOVERNMENT SPECIFICATIONS

... Expert Technical Service Available

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COLD STRIPPERS

Fast! Economical! Safe! New!

"UNISOL"—for removing all baked enamels! Used cold—Non-inflammable—Non toxic—Strips baked enamels in seconds—Used for all type metals—Requires no rinse—Non-injurious to hands or clothing.

"UNISOL No. 2"—A new cold stripper for japans and vinyls—Non-inflammable—Strips tough japans and vinyls in matter of minutes—Used for all type metals.

"STRIPPER 202"—Something new for removing "stop-off" lacquers in seconds—Will not tarnish highly polished metal surfaces—Non-inflammable—Used cold—Non toxic.

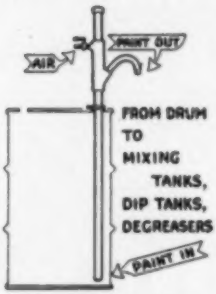
Samples and further information supplied on request.

PELRON CORPORATION

(Formerly Chemco Products Co., Inc.)

7740 WEST 47TH STREET LYONS, ILLINOIS

New Improved Air-Operated TRANSFER PUMP That Works



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Extra Charge for Hoses

Simple design, light construction (weight only 15 lbs.). For all drums with 2-in. openings.

Most any fluid material of a non-abrasive, non-acid, non-alkaline solution can be transferred.

Wilkinson

EQUIPMENT & SUPPLY CORP.

6958 SOUTH WENTWORTH AVENUE CHICAGO 21, ILLINOIS

Washington, D. C., describes a new method of bonding rubber to metal which it is claimed will revolutionize this all-important process.

Copies of the issue of Rubber Developments, in which this material appears, are available without charge from the Natural Rubber Bureau, Department 1, 1631 K St., N.W., Washington 6, D. C.

* * *

Heart-Lung Device. A new use for the Vanton "Flex-i-liner" Non-Corrosive Pump in a revolutionary heart-lung device that may restore life to persons "clinically dead" by performing all the functions of the heart and lungs, was announced recently. The Vanton Pump, which has no stuffing boxes, no gaskets, no valves and requires no lubrication, heretofore has found a wide variety of successful applications in many of the leading industries of the country.

The new mechanical heart-lung device was produced by the J. J. Ashton Co. of New York as a jointly sponsored research project with the Hahnemann Medical College and the Drexel Institute of Technology, both of Philadelphia. It is considered to be one of the leading scientific developments of our time.

* * *

Wood Preservative for Navy. Aircraft carriers of the "mothball" fleet, being fitted for service at the Navy Yard in Boston, are having a chemical wood preservative, "pentachlorophenol", applied to their decks.

Initial application of the chemical is made immediately after any necessary repairs are completed in the re-fitting program. The chemical, in a water repellent form, is also liberally doused on the decks to prevent rot and decay while the ships are in inactive status.

Manufactured by Monsanto Chemi-

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Saves You Money

We make nothing but Thinners—blended Solvents, and nothing else. Naturally, we buy large quantities of solvents—at lowest prices. *Specialization* saves us money on overhead too—and these savings we pass on to you, our customers.

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Use

PERSPIRATION PROOF CLEAR

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- **Here's the finish to put an end to the problem of perspiration damage in jewelry and hardware.**
- **Withstands 15 cycles of standard perspiration test.**
- **Bakes 30 minutes @ 275° F. or any schedule up to 4 minutes @ 400° F.**

Duralac Chemical Corp.

84 LISTER AVE., NEWARK 5, N. J.

cal Company, the chemical, commonly called Penta, is prepared according to Type B of Specification Military W-906 to provide a clean, odorless treatment.

* * *

Materials Handling. Many problems of materials handling in the metal and machinery industries will be considered at the Materials Handling Conference which will be held concurrently with the National Materials Handling Exposition at the International Amphitheatre, Chicago, April 30 to May 4, inclusive.

Sponsored by the American Material Handling Society, metal and machinery executives also will find scores of machines specially suited to the industry among the thousands which will cover ten acres of exhibit area, indoors and out.

* * *

High-Heat Lubricant. The beam of the Eveready flashlight sign on Times Square, in New York City, can be seen for 100 miles on a clear night. Extending 5½ miles into the sky, it is created by an 800 million candlepower searchlight.

"Aquadag", a dispersion of colloidal graphite in water, produced by Acheson Colloids Corp., Port Huron, Mich., lubricates the planetary gears which control movements of the searchlight's carbon electrodes. Ordinary lubricants will not operate successfully in the light's 1500° to 2000° F. temperature range.

* * *

Reprints Now Available. The 12-page article by Paul Blackmore, "How Much is a Gallon of Paint Worth," as published in August, 1950, issue of INDUSTRIAL FINISHING, proved so popular that an additional supply of reprints has been made up. These may be obtained in any quantity at 10 cents per copy. Send orders to this magazine.

A BETTER FINISH WHILE STEPPING UP PRODUCTION 15%

Union Steel Chest Corp. of LeRoy, N.Y., makers of metal tool and fishing tackle boxes, recently installed THREE OVERHEAD JENSEN OVENS with excellent results. Hard, durable finishes—both wrinkled and hammerloid—are coming out of these 70' ovens in 7 minutes; regular finishes in 6. Meanwhile the entire floor area is put to good productive use. Production increases of 15% are reported since the three Jensen Dual-Heat Infra-Red Ovens were installed a year ago to replace conventional-type ovens.

Absolutely Without Cost or Any Obligation to You

Let us conduct laboratory tests on *your* products using *your* finishes. Parts will be promptly returned with recommendations to meet *your* production requirements. *You get* practical proof of every possible cost saving.

Jensen SPECIALTIES INCORPORATED

*Representatives in Principal Cities

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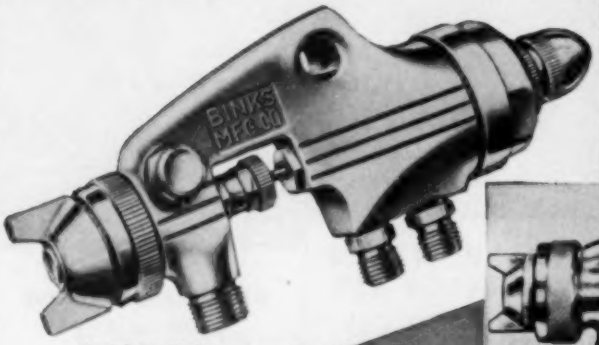
MANUFACTURERS OF *ECONOMY-ENGINEERED* RADIANT HEAT EQUIPMENT

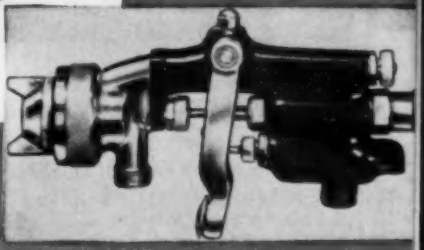
"DUAL HEAT" INFRARED OVENS • CONVEYORS • PAINT DIP TANKS

AUTOMATIC

The answer to cost reduction



Model 21 Binks automatic spray gun—designed for pneumatic operation in Binks Spindle Machines.



Model 7R automatic spray gun—designed for mechanical operation in Binks Reciprocating Machines.

Binks automatic spindle machine

Finishes round, cylindrical, many-sided or hollow products...inside and/or outside. The product spins in front of Binks Model 21 guns. Guns cut off automatically between units and do not spray when empty spindles pass.

Binks automatic reciprocating machine

Designed for finishing flat surfaces such as table tops, range parts, outdoor signs, and many other products. Mechanical arms sweep Binks Model 7R guns back and forth across the conveyor. Guns cut off between units, thus saving paint.

FINISHING

on many products

Binks automatic spray guns increase productivity of your manpower

Binks heavy-duty, automatic spray finishing equipment brings finishing costs down to a new low. At the same time, it improves the quality and uniformity of your finishes. Adaptable to almost any product ranging from many-sided objects to flat panels... Binks automatic guns operate like magic. They start and stop automatically. Starting is instantaneous without spitting or dripping. Virtually no supervision is needed when these guns are at work. Hour after hour, they apply beautiful, uniform finishes of precise film thickness.

An invitation—Send or bring samples of your product to Binks' Laboratory. Tests will be run on automatic equipment to determine exactly what economies can be expected. There is no obligation for this service.

"Better machines are the best answer to increased Production costs." *Burke B. Cole* President

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Try this ONE-COAT, Two-Purpose, Three-Dimension Finish for these Hard-To-Dress-Up Products . . .

the New

DIMENSO® ONE-COAT METALLIC

Here's a rich, lustrous answer, in a single package, to a wide range of finishing problems! Dimenso One-Coat provides a dual-purpose, finish that goes on in a *single* coat without need for special spray equipment.

It gives beautiful, varied, hammered effects for large, uninteresting surfaces—or, by modifying the method of application, a variety of rich opalescent effects. It can cut metal-finishing costs in many cases by eliminating priming operations . . . covers minor metal surface defects in one coat without expensive surface preparations.

Dimenso One-Coat air-dries out of dust in ten minutes. It *bakes* in 3 to 5 minutes at 350° F. It provides a *tough, mar-resisting* film that withstands severe service, with excellent *heat resistance*. For complete details, ask your Sherwin-Williams Branch for Bulletin D-506 . . . or write to The Sherwin-Williams Co., Industrial Division, Cleveland 1, Ohio.

TWO FINISHES IN A SINGLE CAN
Sprayed on smooth metal, Dimenso One-Coat gives a unique hammer pattern. When surfaces are not completely smooth, apply a full wet coat, followed by a light mist coat, and you get a rich, opalescent effect.

NEEDS NO SPECIAL EQUIPMENT
—Dimenso One-Coat is applied with regular spray equipment and no special skill is needed.

HIDES SURFACE DEFECTS WITH ONE COAT—Slight imperfections in metal surfaces are completely hidden by a single coat of this new S-W Brown Label Finish.

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INDUSTRIAL FINISHES

CIVILIAN PRODUCTION

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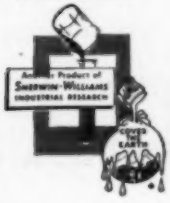

the same dependable source for

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• FINISHING KNOW-HOW

Whether you are buying finishes to meet defense specifications or your own civilian requirements, you can simplify the job . . . find dependable help on special needs . . . eliminate troublesome problems . . . through The Sherwin-Williams Industrial Division with its wealth of know-how and background, both in civilian and wartime experience.

This broad background provides the same extra advantage of experience in Sherwin-Williams finishes supplied to meet military specifications—whether for wood, metal or other surfaces—as in the S-W finishes well known for many years for civilian production, such as Kemclad, Superclad, Kemvar and TV Lacquers. This experience is available wherever you may be, through facilities extending from coast to coast. Call, wire or write The Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland 1, Ohio.

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INDUSTRIAL FINISHES

THE Lilly COMPANY

FINISHES

High Point, N. C.

THE PAYROLL SAVINGS PLAN is a sure way to Financial Security

If you want a bright future, now is the time to start thinking about how you're going to get the things you want—and how you're going to pay for them. The answer is ***regular*** saving through the automatic Payroll Savings Plan.

THE LILLY "KEY" is a sure way to "Finishing Security"

If you want a bright future for your products now is the time to start thinking about Lilly's Dependable Finishes . . . and to begin making ***regular*** use of "The Key to the Right Finish"—so that

"WITH THE RIGHT FINISH—YOU'LL FINISH RIGHT"

THE Lilly FINISHES VARNISH COMPANY

Indianapolis, Indiana
Gardner, Mass.

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IMMEDIATE QUOTATIONS

ON GOVERNMENT

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FINISHES

Backed by experience gained from two World Wars and close cooperation with Government agencies between wars, Glidden can:

- Furnish custom-tailored coatings to function correctly with your own finishing methods.
- Assist you in converting from civilian to military production.
- Provide technical services to insure efficient, economical production.
- Give you prompt help on specification finish problems, *or any other finishing problem.*

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AMERICA'S FOREMOST PRODUCER OF INDUSTRIAL AND SPECIFICATION FINISHES

NACROMER is an excellent substitute for Pearl Essence where cost is a factor and where the high brilliance of natural pearl is not necessary.

It is—

- **Stable**
- **INERT**
- **NON-CORROSIVE**

Samples and literature sent on request.

THE MEARL CORPORATION

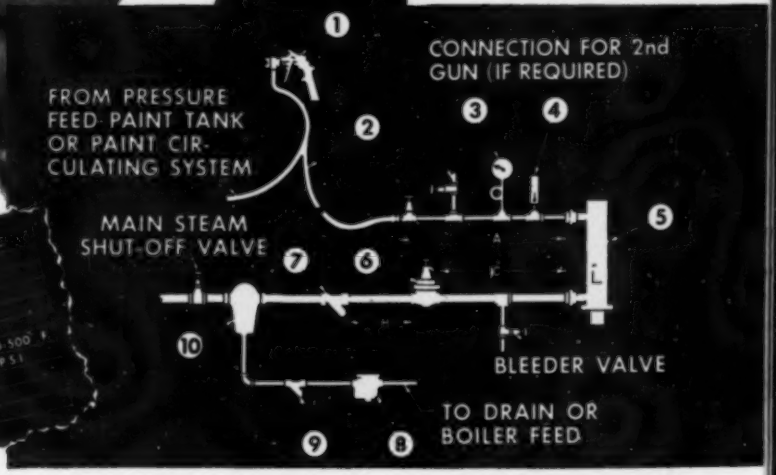
153 WAVERLY PLACE **NEW YORK, N. Y.**

"World's Largest Producer of Pearl Essence"

Spraying

The Brake Shoe Steam-Spray gun.

Typical steam spray system layout.



Typical elements required for the system.

NO.	QUAN.	PART
10	1	STEAM SEPARATOR—1½
9	2	STRAINER—¾
8	2	STEAM TRAP—¾
7	1	STRAINER—1
6	1	PRESSURE REGULATOR—1
5	1	STEAM SUPERHEATER
4	1	MERCURY THERMOMETER 0-500° F
3	1	PRESSURE GAUGE 0-150 P.S.I.
2	1	SPECIAL STEAM HOSE
1	1	STEAM SPRAY GUN

Kellogg Division, 94 Humboldt St., Rochester 9, N. Y.

AMERICAN **Brake Shoe** COMPANY

Finishes with STEAM

CUTS TIME AND COSTS

The revolutionary new spray-painting process developed by du Pont uses superheated steam in place of air to apply finishing materials of higher viscosity in thicker films with one pass of the gun. These coats are surprisingly free from sags, popping and runs.

Operator productivity is increased, cutting time and labor costs. Steam spraying uses less material, solvents and thinners than conventional spray methods.

The steam spraying system may be installed in a production-line operation at moderate cost.

The Brake Shoe Steam-Spray gun makes the process practical for production-line use.

1. Exclusive insulation, heat radiating design, and built-in finger guard assure trigger and handle temperatures which are comfortable to the bare hand.
2. One-piece, easy-to-clean air cap and fluid nozzle are designed to provide uniform distribution of material. Full range of spray width control allows adjustment to any degree desired.
3. Hose support reduces downward torque on head and contributes to the fine balance of the gun.

Brake Shoe will demonstrate this new process in your own plant, or arrange visits to nearby installations. Brake Shoe can supply you with all the equipment necessary for steam spraying.

DOMINION BRAKE SHOE COMPANY, CANADIAN PLANT, NIAGARA FALLS, ONT.

American Brake Shoe Company, Kellogg Division
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Gentlemen:

Please send me information on steam spraying.

NAME ..... **TITLE** .....

FIRM .....

ADDRESS .....

CITY ..... **ZONE** ..... **STATE** .....

Looking for a

CALL YOUR

For a competitive sales feature that's hard to beat, give the customer one he can see! Your Industrial Finishes Specialist can help you give product appearance a needed sales stimulus, and cut production costs at the same time.

This is just one product success story from the files of the Industrial Finishes Specialist! Just one example from hundreds for each manufacturing industry!

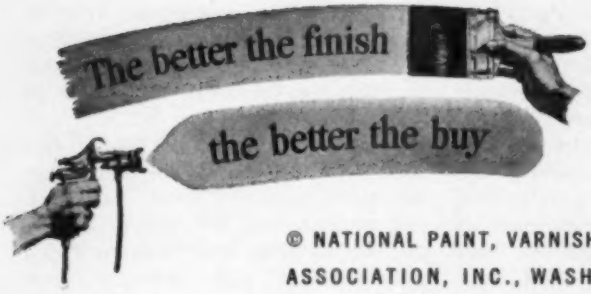
Whatever your product . . . whatever your finishing problem . . . and especially if you are engaged in vital defense work, as so many manufacturers are today . . . you'll find it pays to consult an Industrial Finishes Specialist. He's the technically trained, production and sales-minded representative of your Industrial Finishes supplier. To speed up production time, reduce costs, and increase sales, call him in at the design and production planning stage.

Remember, more and more of your customers *start buying with the finish in mind!*

competitive sales feature?

INDUSTRIAL FINISHES SPECIALIST!

"Hammered" finishes have unusual consumer appeal, compared to ordinary monotone metal finishes, and are adaptable to a wide range of products. But the old two-spray method made costs prohibitive for many. Industrial Finishes Laboratories have developed new finishes that can be applied in one operation, cutting finishing costs substantially!



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Finishing

BY GILBERT CLOSE

(PART II, CHEMICAL SURFACE TREATMENTS)

CHEMICAL surface treatments used on the various metals employed in military aircraft construction are many and varied in purpose. It is logical to conclude that minus these treatments, and while operating under strenuous war conditions, the life of the average military airplane would be halved. In fact, some of the materials now incorporated in our most efficient fighters and bombers, such as magnesium, could not be used without surface treatment to improve their corrosion resistance and provide a better bonding surface for various surface coatings.

In general, the main purpose of the various chemical surface treatments is to provide better corrosion resistance. As stated in Part I of this article (January issue), corrosion resistance, as applied to military aircraft production, means much more than an overall protective coating applied on the finished airplane to act as a barrier between it and the elements. It means, rather, giving each specific part of the airplane a series of the best protective treatments available during the course of manufacture and assembly; then topping these efforts with an overall protective coating after the airplane leaves the assembly line. This inbuilt corrosion resistance, applied on the many metals used, explains the great diversity of cleaning and surface treating methods employed.

For Corrosion Resistance And Better Bonding

Aside from increased corrosion resistance, various chemical surface treatments may be applied for the specific purposes of providing a better bonding surface for subsequent organic coatings, to prevent dissimilar metal contacts and resultant galvanic corrosion, to nullify the corrosive tendencies of various manufacturing and assembly processes, and, in isolated instances, to increase the heat resistance of various metals.

When available, surface treatments that will provide more than one advantage are used. In treating magnesium, for instance, both the Dichromate and Chrome Pickle processes not only increase corro-

Military Aircraft

View in the Douglas El Segundo plant's laboratory where samples of various processing solutions are carefully checked daily or bi-weekly for their concentration and purity.

sion resistance, but result in a slight etch thus providing a better bonding surface. In neutralizing welded brass or bronze parts, or in passivating soldered parts, the solutions not only offset the danger of corrosion caused by the assembly operation, but here again provide a slight etch for better bonding. In a few cases the surface treating solution employed serves the triple purpose of cleaning, increasing corrosion resistance, and providing better bonding surface.

A good illustration of the value of inbuilt corrosion resistance occurred recently when a landing flap that had broken from a Douglas experimental airplane in 1945 and fell into the Pacific Ocean, was washed ashore near Redondo Beach, California. Subsequent examination of the flap by Douglas metallurgists and finish engineers show that, despite five years inundation in salt water both the metal and the finish were still in good condition. While constructed mainly of 24ST Alclad aluminum, components of the flap included steel and magnesium fittings, steel screws and bolts, and aluminum castings. [*To next page*]

The steel parts had been cadmium plated, and slight corrosion was evident. Some galvanic corrosion had occurred at dissimilar metal contact points. Other than that, no corrosion was evident. Even where the aluminum sheeting had been bent during the fall, the flexibility of the coating had been sufficiently great to withstand the strain and protect the underlying metal.

The efficiency of the protective coatings used in this case is best illustrated by the fact that without a protective coating, some of the metals would have started to corrode after 24 hours in a salt spray cabinet.

It is not within the scope of this artcile to describe in detail all the various chemical surface treatments used in military aircraft production. Details of each process, such as solution composition and control, are available in applicable military specifications, or from vendors of the processing chemicals employed. But listing the more important surface treatments employed, along with the reasons for their use, advantages, and an implication of results that may be expected, will provide information of interest to any company contemplating aircraft sub-contract work, or any firm that is interested in improving the corrosion resistance of its current products.

Anodic Treatments For Aluminum

Pure aluminum has good corrosion resistance, but in most cases the metal is too soft and of too low strength to use as a structural material. On the other hand, the aluminum alloys, some of them with weight-strength ratios greater than steel, are excellent structural materials but have relatively low corosion resistance to certain mediums. Industrial atmospheres and the atmosphere over salt water fall in this category. As military airplanes are constantly exposed to these atmospheres, and as aluminum and its alloys are the prime structual materials used in their construction, protective coatings must be employed that will increase corrosion resistance.

Various anodic coatings have proved their value in this conjunction. There are many electrolytes that can be used in the anodic process, but in aircraft work the chromic anodic solutions and the sulphuric anodic solutions (commonly known as the Alumilite process) are generally used.

The net effect of anodic surface treatment of the aluminum alloys is initial formation of an aluminum hydroxide film over the surface of the metal. In the early stages, this film is somewhat soft and absorptive, but upon aging, the hydroxide changes into an aluminum oxide which is both hard and impervious.

There is no measurable dimenisonal change during anodizing, and though the metal suffers a slight loss in weight, it is so small that it is only of scientific interest. Pure aluminum and all of its alloys, except alloys having more than 5% copper, can be anodized successfully. A good anodic film without suplemental protection will prevent aluminum from corroding during a 30-day exposure in a conventional salt spray cabinet. [*To page 26*]

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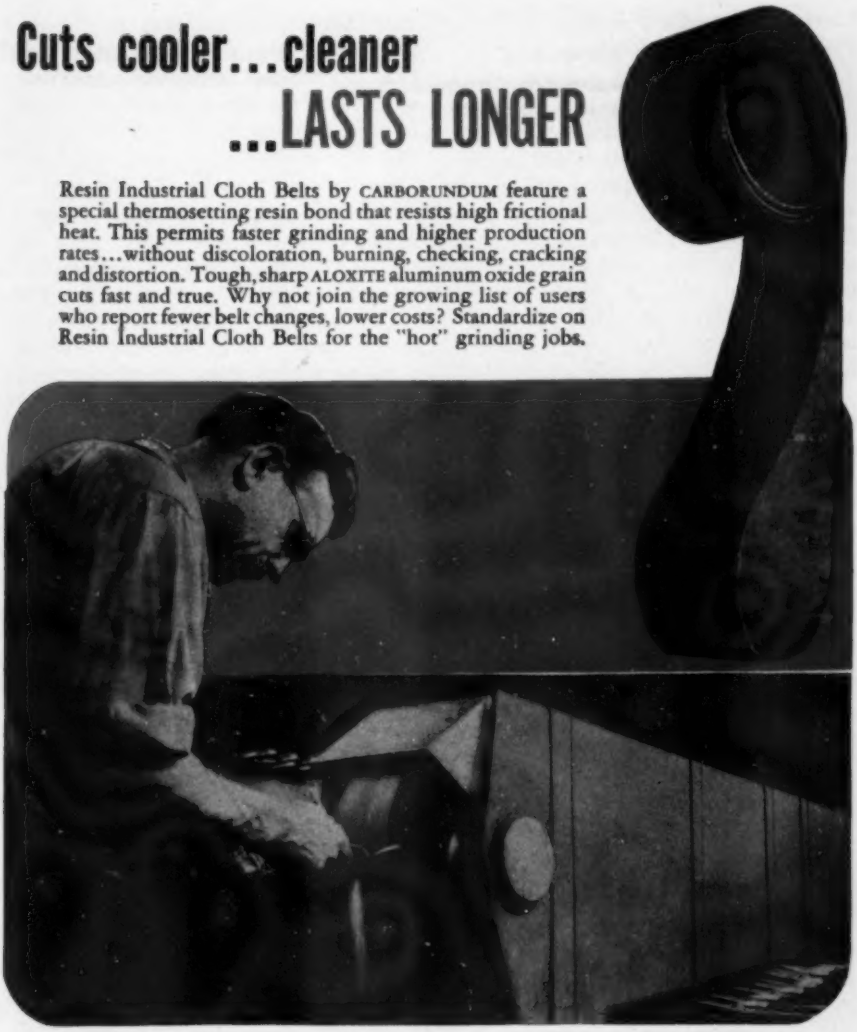

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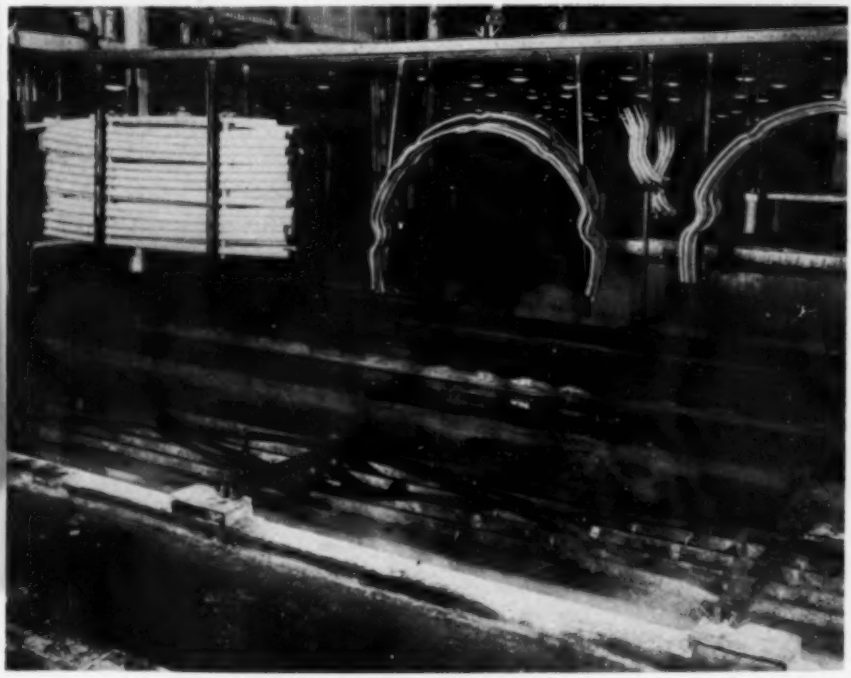
Chromic-Anodic Process Followed by Priming

The chromic-anodic process, more generally employed within the aircraft plants, has the advantage that the solution itself is not highly corrosive and is relatively safe to work with. The film produced varies in color from light gray on some alloys to a dark mottled gray on pure aluminum; it is glossy in appearance and provides an excellent bond for subsequent organic finishes.

General practice is to prime the anodized parts as soon as possible after the process; otherwise they may become soiled and need subsequent cleaning. When required, the chromic-anodic film can be worked after its application; it is not harmed by light buffing, bending and stamping, or mediumly severe drawing.

While employing a highly corosive solution that requires care on the part of operators, the sulphuric-anodic or *Alumilite* process, has the advantage that by applying more or less voltage, and by varying solution concentration, films varying from very soft to hard, and from absorptive to impervious can be produced. These films may be employed where



General view of the anodizing department in the El Segundo plant of Douglas Aircraft Co. Rigid and constant control over both the chemical and mechanical operations involved in these important processes are responsible for the excellent results that are obtained.

CONVEYORIZED FINISHING SYSTEM REPLACES 3 BATCH TYPE OVENS AND DEGREASER IN SAINT PAUL PLANT

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Conveyor is shown entering and leaving burn-off oven. Ware is degreased by subjecting it to 600° F. for 6 min. Finish bake time is 8 min. at 350° F.

Ware enters and leaves burn-off and finish bake ovens thru single bottom openings.

Unloading takes place at this point where the various pieces are sorted and stacked on trucks ready for packing and shipping.

softness and absorptiveness is desirable for subsequent coloring, or for the application of sealing compounds, or where extreme hardness is required for superior wear resistance.

What Chromodizing Aluminum Accomplishes

In recent years, the chromic acid etch has been substituted for anodizing on many aluminum alloy parts in airplanes built for the military services. This process adds to the corrosive resistance of the alloys while providing an excellent bonding surface for subsequent organic finishes. Chromodized parts, however, require subsequent organic finishing, and unlike anodized parts cannot be used without it.

This process consists of immersing the aluminum or aluminum alloy part in a 4% to 6% solution of chromic acid maintained at 40° F. for 8 to 15 minutes. Prior alkaline cleaning is recommended. After immersion, the parts are rinsed in hot-water and then dried. After the process, clean gloves should be used in handling the metal, and the parts should be finished as soon as possible to avoid contamination that would later cause corrosion to occur under the organic coating.

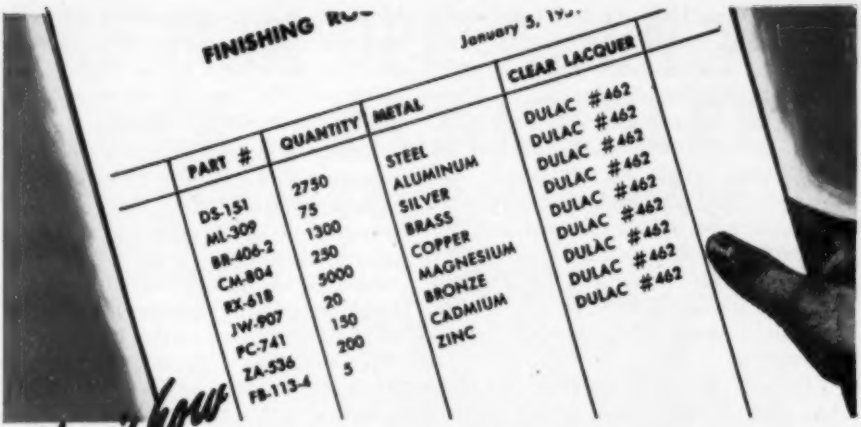
Treatment of Magnesium; C. P. and Dow No. 7

Magnesium alloys are growing in importance in military aircraft construction, not so much because as is popularly believed of their lighter weight, but because a magnesium component weighing the same as an aluminum component will have more mass and much greater rigidity. In various high speed experimental airplanes, the fuselage and wing skins have been made of sheet magnesium of sufficient rigidity to eliminate much internal bracing. Aluminum skin of same weight would have required complex bracing to offset its flexibility.

The greatest stumbling block in the pathway to greater use of magnesium has been its corrosive tendencies. Numerous chemical surface treatments have been devised that will improve corrosion resistance under certain conditions, but the only two treatments which have proved satisfactory under corrosive conditions to which military airplanes are subjected are the crome-pickle treatment and Dow treatment No. 7 (dichromate process).

The chrome-pickle treatment, widely used on magnesium sheet stock, consists of a ½ to 3-minute dip at room temperature in a solution containing 1½-lbs. of sodium dichromate and 1½ pints of concentrated nitric acid to each gallon of water. The treatment imparts an iridescent brassy appearance to the metal. The film is somewhat soft when first formed, but hardens when it becomes dry. About 0.001 to 0.002-inch of metal is etched away during treatment, dependent upon the time of immersion, so this process is not recommended where close tolerances must be maintained.

Dow treatment No. 7, more often called the dichromate treatment, does not affect dimensions, and is used extensively on magnesium castings, forgings and extrusions. It can be used also on finished machine parts with close tolerances. This treatment consists of a 5-min-



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ute dip in a 15% hydrofluoric acid solution at room temperature, followed by a 45-minute boil in a 10% sodium dichromate solution. During this treatment, all surfaces, even to deep holes and cavities in the part, treat equally well. Of course, great care must be exercised in handling and working around the hydrofluoric solution as it is harmful to both men and materials. Rubber gloves, a rubber apron and, in closed space, a respirator should be worn.

Both treatments provide an excellent paint base, but under conditions of military aircraft use, neither provides sufficient corrosion protection without subsequent finishes. The organics applied over treated magnesium usually consist of one or two coats of zinc chromate primer, followed by at least two coats of lacquer conforming to government specifications.

In recent years a few patented and commercially available surface treating techniques for magnesium have been developed. Some of these hold great promise, but as yet are not universally used. In aircraft work, any such process should be regarded askance until it is thoroughly tested and military approval of its use has been obtained.

Passivating, Neutralizing Treatments and . . . .

In certain manufacturing and assembly operations common to all airplane plants, such as welding, brazing and soldering, the materials and chemicals used in the process constitute a corrosive hazard to the part unless they are removed or passivated immediately. Left trapped beneath subsequently applied organic coatings, these substances would soon set up corrosive pockets that would be highly destructive to the external coating and to the metal itself.

Brass and bronze surfaces, for instance, must be passivated as soon as possible after brazing. This is accomplished by dipping the parts in a solution composed of one fluid ounce of sulphuric acid and one avdp. ounce of sodium bichromate to each gallon of water. Immersion is followed by a rinse in hot water. This treatment serves the triple purpose of passivating the surface, removing of scale caused by brazing, and provides an excellent bonding surface for organic finishes.

When acid-core solder is used in the soft soldering of parts, immediate neutralizing is employed to offset any corrosive tendencies of the residual acid. For this purpose a solution composed of 2-oz. (avdp.) of soda ash to each gallon of water is used. Parts are either dipped in the solution or the soldered area is thoroughly swabbed. Treatment is followed by a clean water rinse.

Many types of stainless steel are used in military aircraft production, and in general, specific cleaners and surface passivating solutions are used. When possible, passivation is accomplished immediately after cleaning to prevent contamination of the surface. A good cleaner for most stainless steels consists of 20 parts by volume of nitric acid (42° Be′), 10 parts of hydrofluoric acid (48%) and 70 parts water. Following a clean hot water rinse, the metal is immersed for 30 minutes in a 20% by volume solution of nitric acid and water, followed by

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another hot water rinse. Common practice after this final rinse is to check for remaining acidity, using phenol phthalein. If any acidity remains, the part should be rinsed again, then re-checked.

Phosphate and Oxide Coatings for Steel

Many methods are used by various aircraft companies to produce phosphate and oxide coatings on steel parts. In general, the solutions used in these processes are patented, commercially available compounds, and information on their use is available from the vendor.

While the phosphate coatings alone have limited corrosion resistance, they provide an excellent bonding surface for subsequent coats of organic finish. All military airplant finish specifications calling for a phosphate surface treatment specify additional protection of some type. In general, the phosphate coatings result in a dimensional build-up of from .0002 to .0005 inch, but in some cases, such as with the Parko-Lubrizing treatment, the parts immediately wear to original size.

Among the processes that have proved successful in aircraft work are Parko-Lubrizing, Parkerizing, Irco-Izing, and Bonderizing.

Oxide coatings have even less inherent corrosion resistance than the phosphate coatings, and will usually fail after 10 hours of salt spray exposure. But here again,

(Continued on page 37)

Mechanical handling is generally employed to speed parts from tank to tank as they move through the various chemical surface treatments. Photo, courtesy of Douglas Aircraft Co.

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Both steel boxes were top-coated with the same high-grade enamel; both had been cleaned thoroughly before finishing . . . but one had been primed with **STANTITE**. Then both were subjected to a salt spray under laboratory test conditions: after 93 hours the first box showed 75% rust failure—but the **STANTITE**-primed box showed no film failure after 500 hours!

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use of an oxide coating provides an excellent bonding surface for subsequent finishing. Oxidizing processes commonly used include Du-Lite, Pentrate, and Ebonol S.

The use of chemical blackening processes in the military aircraft industry is limited largely to very close tolerance parts which will be subsequenty protected by a coating of rust preventive oil. Processes that have proved effective for this type of work include the Black Alumilite treatment for aluminum, Dulite CU or Ebonol C for copper, Dow Treatment No. 8c for magnesium, Dulite, Ebonol S, or Pentrate for Steel, and the Armco Process (molten sodium or potassium dichromate) for 18-8 stainless steel.

Other Surface Treatments Not Included Here

This article lists only processes that can be defined as "chemical surface treatments" to prevent or aid in preventing corrosion. Other treatments, far too numerous to mention in an article of this scope, are employed for the same purpose. Electroplating, metal spraying, insulating compounds between dissimiliar metals, protective oils for the interior of tubing, casting sealants, various plastic coatings, and many commercial preparations such as Metalprep and Lithoform, and specialized protective materials for parts in contact with fuels, oils, battery acid, etc., are used as well. Most of these, however, do not cause a change in the surface composition of the material treated and therefore cannot be considered as a chemical surface treatment. (Metalprep and Lithoform do cause surface changes).

To summarize this complex subject, it is safe to say that while most of the chemical surface treatments described herein are used in many types of industry, the rigid process control exercised over each in military aircraft production is why superior results are obtained. Guess work is definitely out of the picture. All solutions are prepared under laboratory supervision, and are checked daily or bi-weekly for concentration and cleanliness. When a solution has reached a predetermined amount of impurities, it is discarded immediately and a new solution is prepared. Temperature control is maintained automatically between very narrow limits, and constant mechanical or air agitation is provided when necessary.

More specifically, each process is employed in a manner to procure the highest degree of efficiency. Lesser results, results that might well pass inspection in many types of industry, call for immediate rejection when the part is intended for installation on a military airplane. Final acceptance in many cases does not rest with aircraft company inspectors, but is left to the descretion of assigned military inspectors.

Neither the Army or the Navy wants to send out a pilot whose training has cost $15,000, in an airplane that costs anywhere up to two million dollars unless there is some reasonable assurance that both will return in the normal course of events. There is too much at stake to risk accepting a single airplane part unless it is manufactured as good as industrial science can make it—and then given the best protective coating.

How Simplification Cuts Costs

Spray painting heater shells after they have been well cleaned and tack ragged.

By Howard E. Jackson

SIMPLICITY IN finishing electric hot water heaters is the final step of a cost cutting program which has been placed in operation at Seidelhuber Iron & Bronze Works, Seattle, Wash. The Seidelhuber plant manufactures a complete line of automatic-electric hot water heaters, with bronze or galvanized steel tanks, ranging in size from 15 to 100 gallon capacities. More than 50,000 heaters are made in this plant annually.

In preparation for receiving a baked enamel finish the segment-shaped pressed-metal "feet" are cleaned in a degreasing tank before being welded together. The cleaning compound used is trichlorethylene contained in a tank which is directly under a chain hoist suspended from an overhead monorail. When only small quantities of parts are to be cleaned they are placed in a wire mesh basket and lowered into the cleaning tank by the hoist.

Degreasing Setup; Ferris Wheel in Tank

On regular production runs a small ferris wheel is suspended from the hoist, lowered part way into the tank, and slowly rotated to carry parts into and out of the cleaning solution. One man loads the wheel's swinging baskets on one side of the tank, and a second man unloads them on the other side of the tank. This method of dipping parts is three times as fast as putting them into separate baskets and using the hoist for dipping — a substantial savings on degreasing alone. The supports for a tank are welded together, bolted to the inner tank of a hot-water heater and positioned on the bottom unit of a wood crate used for shipping.

Taped Chromium Trim Attached

Before final assembly the outer shell, close to its top end, is wound with a pre-taped chromium plated

in Finishing Hot Water Heaters

zinc strap. Use of a premasked strip of bright metal saves masking the brightly chromed strap before painting. The masking tape is removed shortly before the painted heater shells reach the baking oven, in order to prevent a sticky residue from being left on the chrome strip. Formerly, when the masking tape was allowed to remain in place during baking, the adhesive on the tape became "gooey" while in the hot oven and had to be wiped off as the heater shells came out of the oven.

The chrome trim around the top of each heater sets off the finished product attractively—an important feature in selling hot water heaters!

The crome metal straps are fastened in position thusly: A hole 3/32 x 7/16-in. is cut in the heater shell, close to the top end. One end of the chrome strap is inserted through this hole to the inside, 2-in. or so and bent back against the inside. The strap is then wound tightly around the shell and the other end is also inserted through the hole and bent back. Both inserted ends of the chrom strap are bent back cotter-pin fashion and pressed against the inner (concave) curvature of the shell. A metal screw (for sheet metal) is then driven through the hole from the outside to hold the ends in place and finish off the job.

Traveling Pallets on Conveyor Line

The "pallet shop", as it is called, is very compact. It is a conveyorized line devised for fast produc-

Rotating rack loaded with pressed metal parts and lowered into degreasing tank. One man loads the revolving rig and another man then unloads it. The rig can be raised clear of the tank when desired. This method of handling parts and cleaning them is three times faster than putting them in baskets and dipping them.

tion in assembling, cleaning, plating, drying and crating hot-water heaters. The floor-level conveyor line is 180-ft. long. For a floor plan view of the conveyor line, just imagine a long endless loop—two parallel lines not far apart and connected at their ends with hairpin turns.

Each pallet car is mounted on four free-turning casters. The center of the pallet, underneath, engages a drag chain—the conveyor chain. Under normal conditions of production, 260 heaters go through the pallet shop in an 8-hour shift.

Shells and tops are not degreased. They are washed with solvent, sanded with fine sandpaper or steel-wooled where necessary, wiped with tack rags and etched with phosphoric acid—all of this being done by one man working on the conveyorized pallet line.

After an inner tank, with its assembled bottom and feet resting on an end section of wood crating, has been placed on a moving pallet car, fiberglas wool is laid against the upright tank by means of two huge "shoe horns". Then the outer aluminum casing is slipped on over the "shoe horns". When the aluminum outer casing is in place the "shoe horns" are withdrawn, and the top is put on the almost completed heater. After the final fittings are put on, the outer shell is ready for cleaning.

Wash With Thinner; Light Scuff Sanding

The entire outer shell is first washed with a low-cost paint thinner. A light scuff sanding follows to cut down any slight roughness and to smooth out any small scratches in the metal. No. 240 wet-or-dry abrasive paper is used for this there. The entire shell is then work.

A wire brush is rubbed over all joints where the glass wool insulation might stick out; and these same joints are air-hosed dry to remove any cleaner fluid (paint-thinner) that may have been entrapped wiped with a tack rag to remove any specks of dust or lint. Finally, before painting, the shells are slightly etched with a mild solution of phosphoric acid to assure better adherence of paint to the metal.

No drying time is designated after cleaning, no primer is put on before painting, and there is no sanding or buffing between coats. As the cleaned heaters move along the conveyor line and reach the painting area they are just lightly mist coated (fogged) quickly and

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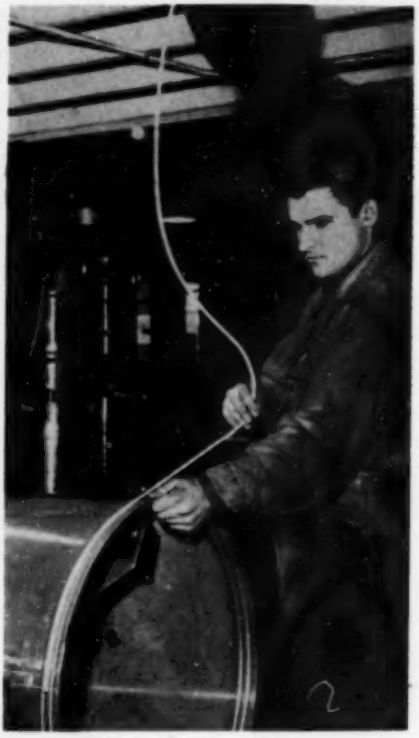
then given the final coat of paint. In this way some 30 heaters can be easily painted within an hour.

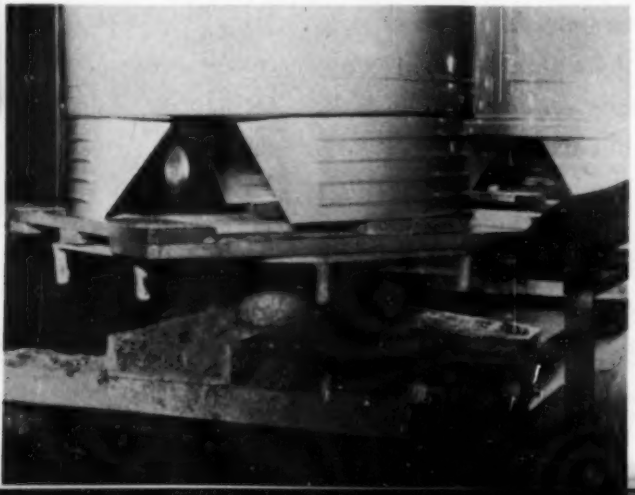
Spray Painting Technique; Small Economies Count

Ready-mixed paint, delivered in 5-gallon cans, is stored in the plant, not too far from the production line. The paint supplier adjusts the paint according to the season—making it slightly thinner in winter and heavier in summer—so that no mixing or adding of thinner is necessary by the user. Spray painting is performed in a 12-ft. water wash spray booth. One spray operator can easily do all the work, but sometimes the cleaner sprays on the mist coat. White is the only color used—unless a customer requests a different color; then small cup guns are used for spraying the special color. The air pressure used for spraying is never changed at the guns between coats.

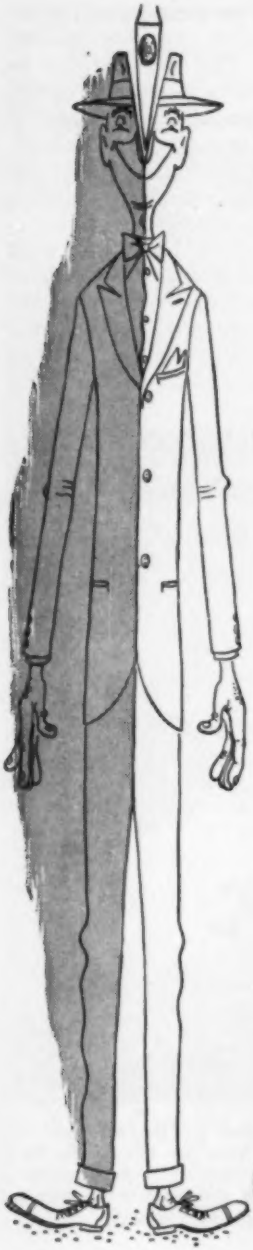
Small economies that add up are watched closely. For instance, the company formerly painted all of those little electric connection boxes, but it was difficult to have them



A chromium plated zinc strap, with masking tape on its bright side, is wrapped around the top of the shell before spray painting.



Stationary pegs projecting beneath the swiveling pallets contact stationary spike-like trippers along the side of the oven, causing the heaters to rotate eight complete turns during the baking cycle. The first tripper has a special telescopic point for contacting the leading peg.



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By using Bede Paint Heaters in your spraying operation you can slice your thinner requirements by *one-half or more!* ● You see, when you heat paint, lacquer, synthetic, or whatever finish you use, the heat takes the place of thinner. When hot spraying a normal full coat you use about one-half the amount used with cold spray. And if you want an extra-heavy coat, you really cash in—for *little* or *no* thinner is added to the paint. ● You can list many other outstanding advantages of using Bede Paint Heaters, too.

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One coat can replace two or three coats sprayed cold.

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BEDE PRODUCTS Inc.

INDUSTRIAL FINISHING SPECIALTIES

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accepted by the underwriters. Now the boxes are electroplated at the nominal charge of six cents per box.

Covers for the connection boxes have to be painted inside as well as outside. This problem was solved by hanging hundreds of covers on an old aluminum shell (with their undersides turned outward) and spray painting them with the same white synthetic baking enamel that is used on the outsides of heaters. Later, each cover is placed on the heater and its outside surface is spray painted during the spray painting on the production line.

Enamel Coating Baked In Infra-Red Oven

After the heaters are painted they continue on the conveyor and pass through the infra-red oven. This baking oven is 22-ft. long by 3-ft. wide; each heater requires about seven minutes to pass through the oven at a conveyor speed of 3-ft. a minute. There are 684 lamps along the bottom rows on each side; these are of 375-watt rating. The lamps are staggered at the sides, so that there are no "dead spots" during baking; but they are not staggered in the ceiling, as the heaters are rotated while they move through the oven.

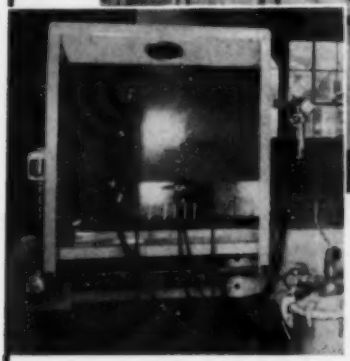
Heaters Rotate as They Move Through Oven

Conveyor pallets upon which the heaters ride are free to swivel 360° by virtue of their "lazy Susan" construction. Stationary pegs, spaced equidistantly and projecting straight down under each pallet, contact stationary spike-like trippers which are spaced along the right hand side of the oven, causing the units to rotate eight complete turns before reaching the end of the oven. The first tripper is equipped with a telescopic point which slides back into its case, if need be, upon contact with the leading peg. This starts the heater rotating smoothly, with no jarring effect upon the conveyor line.

As the heaters leave the oven they are cooled by ventilating fans. Few test panels need to be made, and no color comparisons are necessary. The company leaves it up to the local paint supplier's experts

Heaters are crated on the conveyor line, less than 20-ft. from the end of the infra-red oven which appears in background at left. Heaters are still warm when they are removed from the conveyor.

EXCEPTIONAL SAVINGS on finishing costs with Capitol high-speed electric automatic spray-bake equipment. Machine pays for itself in three months.



● Ideally suited for finishing lipsticks, clocks, pens, pencils, door knobs, etc. Approved by New York City Board of Standards and Appeals.

Here's How: Speedy production — Over 200 pieces per minute. Small space required — as little as 6′ x 18′. Quick change adjustments — only 10 minutes! Machine cost recovered in few months by actual case histories. Absolutely uniform quality controls.

Ask Now For: Details on these and other exclusive features. Or better still, bring in or send in your own work samples for test run and estimate. No obligation.

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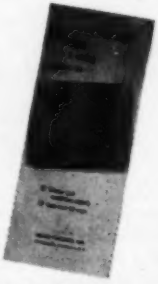
DETRO MFG. & SALES CO., INC., CULVER CITY, CALIF.

OAKITE CrysCoat PROCESS prepares metal for painting.



FREE For illustrated folder on the CrysCoat Process, write Oakite Products, Inc., 32F Thames St., New York 6, N. Y.

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MATERIALS • METHODS • SERVICE

Technical Service Representatives Located in Principal Cities of United States and Canada

to take care of keeping the paint uniform in color, viscosity and quality.

When the heaters become cool after leaving the oven, the thin strips of masking tape mentioned previously are pealed off; serial plates, name plates and the instructions are attached; and the assembled wooden crates are slid over the heaters and nailed to the bottoms previously put on during assembly. Crating actually takes place on the conveyor line less than 20-ft. from the end of the baking oven.

McCaffrey Joins Masury

John McCaffrey, well known in midwest paint circles, has been appointed Western Field Manager for John W. Masury and Son, Inc. Mr. McCaffrey has, in recent years, operated his own specialty business.

Mr. McCaffrey is an old associate of Frank Connolly, Masury's president, and was for six years Central Division Manager for Valentine with headquarters at Chicago, under Mr. Connolly.

Pending Masury's opening of a Chicago warehouse or branch, Mr. McCaffrey's headquarters will be at Cleveland, Ohio.

Industrial Safety Equipment Association Meeting

The Industrial Safety Equipment Associatoin held its second quarterly meeting at the Dearborn Inn, Detroit, on January 17, with 29 members attending. Next meeting of the Association will be held at the University Club, New York, April 2, 1951.

Committee reports were read with members showing particular interest in the defense mobilization and material supply situations. Secretary Stewart N. Clarkson reported on the current outlook for materials. He was confident that an industry with such a vital role to play in the conservation and utilization of manpower as the safety equipment industry, would be able to secure the necessary materials to aid President Truman's all-out effort to reduce industrial accidents.

John T. Monahan, Assistant Sales Manager, Safety Products Division, American Optical Co., was appointed by Association president Charles H. Gallaway to the chairmanship of the Head and Eye Protection Committee.

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1. Dries with lacquer speed.
2. Has double lacquer solids at spray gun.
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FASTER REFINISHING WITH *ELECTRO* COLD STRIPPER

▸ No more long waits while slow-acting paint removers do their work like a team of lumbering oxen. Simply dip the article into Electro Cold Stripper and—Presto!—you can see the old finish literally "pop off" before your eyes. Wash with a pressure stream of water or wipe well with rag and REFINISH IMMEDIATELY. No fuss, no waiting, no bother.

▸ Used cold. Non-inflammable. Non-injurious to hands or metal when used as directed.

▸ Removes paints, enamels, synthetics, lacquers and wrinkles in minutes—not hours. Especially effective on hard-to-remove baked-type finishes. Will not harm even precision finished aluminum, copper, brass, magnesium, zinc, steel, cast iron or their alloys in time required for removal of paint film.

Write for sample and quotations—or order 5 gallons at drum price.

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SPEEDY PRODUCTION SETUP FOR

Painting Small Parts

EFFICIENCY in the painting or waxing of small steel parts is increased three to four times in an automatically-operated dip-whirl coating machine at Tinnerman Products, Inc., of Cleveland, Ohio, manufacturer of the *speed nut* type of fasteners.

A square cabinet, built around the coating machine, was designed and installed by Tinnerman engineers. It eliminates the necessity of workmen lifting and lowering baskets of fasteners weighing approximately 90-lbs. from floor level to and from a height of approximately four feet—to get them into and out of the coating machine.

Loading the Machine With Power Hoist

The mesh basket to be filled with unpainted fasteners is placed at floor level, on a lift operated on a vertical track in the front of the cabinet. A batch of approximately 50-lbs. of fasteners is dumped from a can into the mesh basket. The operator presses a button on the front of the cabinet, and the lift rises vertically by an electrically-operated Zip hoist. The lift comes up four feet—to the level of the front opening of the cabinet.

The operator then slides the loaded mesh basket into the machine and onto a metal disc. A cylindrical shaped container, elevated and lowered by two air cylinders beneath it, and filled to a depth of 7-in. with paint or liquid wax, is then raised to permit the liquid to cover the metal parts in the mesh basket.

After the metal parts have been submerged the paint container is lowered until the bottom of the mesh basket is above the surface of the paint. The mesh basket is spun on the disc at 450-rpm. for approximately 45 seconds. At the end of this interval a "dog" contacts the basket and stops its motion.

Mesh basket of painted parts is moved from coating machine by an inclined conveyor and easily dumped into a container—or on trays to enter oven for baking the paint coating.

The paint container is lowered further to clear the bottom of the loaded mesh basket. Another mesh basket loaded with metal parts is slid into the cabinet, pushing the first one out onto a conveyor track which has been raised by a series of pulleys and a compensating weight, to the level of the opening on the back of the cabinet, opposite to the opening on the front.

The basket of finished parts then rides down a track conveyor into a pivoted rack, where the parts are placed in trays ready for baking.

Navy Marine Paints

DURING the last war, the Navy adopted new alkyd-based coatings for practically all areas of ships above the water line. This development has resulted from years of careful testing, described as probably the outstanding example of the recognition of alkyd resins. It is interesting to note that the British Navy has adopted paints based on alkyd resins for exterior marine finishes.

A recent publication of the Lead Industries Association (Red Lead Technical Letter No. 4, New York, Lead Industries Association, 1949, 9 pp.) offers formulas for red lead paints for marine exposures. These paints were selected on the basis of outstanding performance under practical exposure conditions, including marine atmospheres, intermittent immersion and continuous immersion. Significantly, of the 12 formulas offered for the production of the red lead paints, ten employed alkyd resin vehicles, most of these being glyceryl-phthalate resins.—*Glycerine Facts.*

Silicone Resins Used In Finishes, Polishes

SILICONE resins, since they were introduced in 1943, have found enough unsuspected uses to build up a business of several million dollars a year. These resins, chemically a cross between glass and ordinary plastics, are especially notable for their resistance to extreme temperatures. They are also incompatible with many other materials, and this property has made them especially useful as mold-release agents and in a number of small-volume applications.

Based on a framework of silicon and oxygen, modified by carbon-containing organic groups, the silicones are available as liquids, semi-solids, grease-like compounds, rubbery solids, and resins that solidify permanently under heat to form flexible heat-resistant films.

The largest market, according to industry reports, is as mold-release lubricants. Silicone fluids have become the standard mold-release agents in the rubber industry, and are used to prevent sticking of the molded rubber product to the forming mold, thus resulting in improved products and higher production. Silicone fluids and compounds are also widely used in plastics molding and in the "shell" process for making foundry molds and cores for cast iron and other metals. Because of the advantages of this process and the size of the foundry business, this use may become one of the biggest markets for silicones. Related to the mold-release application is the use of a silicone resin as a glaze for bakers' pans, good for 150 or so bakings, which eliminates greasing and washing the pans.

Polishes for Automobiles And Furniture

Another market for silicones is car and furniture polishes. The silicone composition spreads easily, reducing or eliminating polishing, and the finish is claimed to resist dirt and weather. Since the silicone finish is more incompatible with paints than are waxes, touching up the paint job on a fender or scratch, for example, requires special preparation of the whole surface to be painted.

With a silicone varnish, fibrous glass, and mica insulating the windings, an electric motor can be run hotter, and hence a given size can put out more work than with earlier types of insulation. Silicone varnishes have found application in some large electric motors subject to high overload or exposed to high temperatures, excessive moisture, or corrosive atmos-

Drastic labor reductions . . . greatly lowered production costs!

NOTE→

"We are very much pleased with our setup. We have reduced our personnel and are taking care of our production easily with the reduced personnel. Also find it gives us a more uniform finish, reduces repairs and fire hazards."—Tell City Chair Co., Tell City, Ind.

WE HAVE for over a quarter of a century, as mechanical engineers and specialists, systematized and conveyorized furniture manufacturing plants in all sections of the country. And, it's the same story over and over—satisfied customers, production speed-up, labor reduction, more uniform finish—all adding up to greater profits. An analysis of one installation consisting of 1,200-ft. overhead trolley conveyor and 2,800-ft. variable speed platon conveyor, including three 100-ft. drying ovens and six spray booths, showed personnel reduction of 75 and production increase of 100%. Yes, it's all possible when BALSA handles the job. How BALSA does it, with facts and figures on actual installations, will interest you. Write us!

BALSA, Inc.

Development Engineers and Designers of Original Furniture Conveyor Installations

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pheres, or in transportation motors where space is valuable.

Silicone paints to withstand high temperatures, up to 600°F., are on the market, but the need for special high-temperature equipment to dry them limits their use. A new silicone finish for stoves and other consumer products, soon to be introduced, is said to be harder than the usual organic finish, but more flexible and more stain and mar-resistant than the enamels used on household appliances.

Familiar to consumers are the silicone-impregnated tissues for wiping eyeglasses, and the bouncing putty, whose only uses at present seem to be as a leveller for furniture resting on uneven floors, as centers for golf balls, and as a source of amusement for children and adults.—*Industrial Bulletin of Arthur D. Little, Inc.*

J. L. Fitzsimmons, Factory Representative, Moves

James L. Fitzsimmons, New Jersey representative for Houghton Laboratories, Inc., Olean, N.Y., and Eronel Services, Inc., New Milford, Conn., announces that his business address has been changed from Belleville, N.J., to 39 Lackawanna Plaza, Bloomfield, New Jersey.

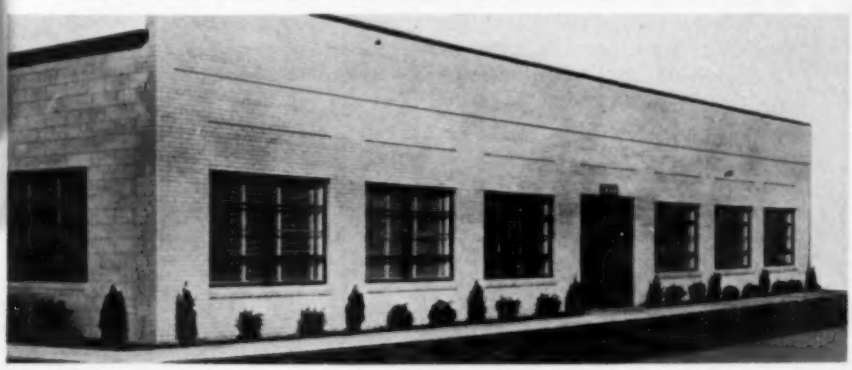
Enterprise Paint Mfg. Co.

At a recent meeting of the Board of Directors of the Enterprise Paint Mfg. Co., Chicago, Frank L. Sulzberger, former President, was elected Chairman of the Board, and John Harry Lawson, former Executive Vice-President, was elected President of the company.

Western States Lacquer Corp. Appoints New Lab. Chief

Dr. H. C. Kao has just recently taken over his new duties as Chief Chemist of Western States Lacquer Corp., 4400 E. Washington Blvd., Los Angeles 23, Calif., where he is directing this company's laboratory control activities and technical service as well as its expanded and accelerated program of research and product development.

After receiving his Ph. D. Degree at Columbia University, Dr. Kao devoted a number of years to the biochemistry field. He is also well known for his work with fats, oils and synthetic resins. For the past ten years, Dr. Kao concentrated his efforts in the broad field of paint chemistry. Full expression of his comprehensive technical and practical experience is assured through the modern, completely equipped laboratory facilities for control, research and development that Western States Lacquer is placing at his disposal.



New office and plant (larger quarters, expanded production facilities) of Detroit Surfacing Machine Company (Detroit Easy Finisher), 1333 East Eight Mile Road, Detroit 20, Michigan.

YOU'RE AHEAD with . . .

LOCAL CONTROL . . . for faster decisions; more rapid service; and closer, more friendly liaison from the Brolite factory nearest you.

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. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE** to **YOU!**

Above illustration shows a section of the area where wet sanding operations are carried on in the two main production lines. Two Mahon Direct Gas-Fired, Tunnel-Type Drying Ovens which are equipped with Cooling Tunnels at the exit end are visible in the background. This is part of a complete, ultra-modern Mahon Finishing System specially designed for Automobile Bodies.

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SYSTEMS

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Bodies Emerging from two Mahon Hydro-Filter Spray Booths, Make Air Supply Above, and Baking Ovens at Right.

MODERN MAHON FINISHING EQUIPMENT Will Do A Better Job of Finishing For YOU Too!

Progressive manufacturers today insists on modern Mahon Finishing Equipment . . . they pay a little more for the many new features engineered into these systems to reduce maintenance, provide better working conditions, and produce finer finishes at lower cost. Illustrated here are some of the major units of equipment in a complete Mahon finishing system specially designed to process automobile bodies. This system comprises two complete finishing production lines and an additional two-tone and repair line . . . some of the innovations include an elaborate air supply and distribution system, "Hydraire" flood sheets for more efficient control of air flow within the down-draft spray booths, automatic sludge segregators and unloaders to eliminate the necessity for extensive periodic cleaning, cooling tunnels at exit ends of drying and baking ovens to conserve floor space and exhaust the excessive heat which the hot bodies would otherwise radiate within the plant. When you are in need of new finishing equipment, it will pay you to take advantage of the experience and the wealth of technical knowledge and practical know-how accumulated by Mahon engineers over a period of thirty years. See Mahon's Insert in Sweet's Mech. Ind. File, or write for Catalog A-650.

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Engineers and Manufacturers of Complete Finishing Systems—including Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Dry-Off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Systems, and Drying and Baking Ovens; Core Ovens, Hydro-Foam Dust Collectors, Fog-Filters, and other Units of Special Equipment.

AHON

1951 *Furniture Show*

BY ROSALIE FLANK

Highlights of new designs, finishes and materials shown at the National Home Furnishings Exhibit in Chicago, in January.

REARMAMENT and the present international situation have made their mark on the furniture industry . . . . Seeking material to replace defense control losses, a mobilization market with dealers buying against future shortages—these factors helped to ring up an attendance record of more than 24,000 at both the American Furniture Mart and Merchandise Mart in Chicago.

A 9-drawer dresser (no hardware) made of oak finished in a highly polished silver grey. Half-round moldings serve as drawer pulls.

Production, not sales, is the furniture problem for 1951. Most manufacturers believe that production should continue at 1950's peak level for the first 100 days of 1951; after that, curtailment because of the material shortages was forecast.

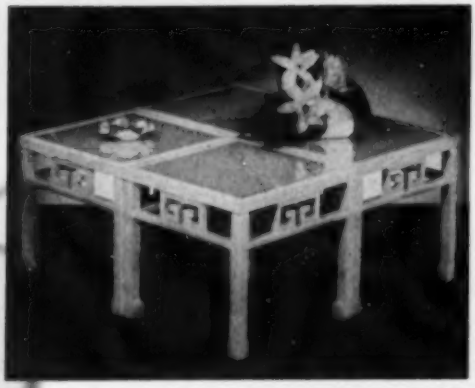
According to a report by Seidman & Seidman, accountants who make an annual review of the industry, wholesale furniture prices, during 1950, are estimated to have risen about 15% — a good part (about 12%) since the Korean war.

Hardwoods Available but Metals go for Defense

Commenting upon the outlook for the industry, Frank E. Seidman who prepared the report for his firm, said: "Wood furniture manufacturing should be one of the industries that will experience no serious transition, conversion or restriction problems. Woodworking facilities will probably be even less

[PAGE 56]

Cedar chest manufacturers have developed some double purpose units. This one, finished in Cordovan mahogany, is high enough to serve as a buffet, for use in the dining room.



Typical of the television influence is this sectional cocktail table. It is really four separate tables combined into one unit; can be arranged in L shape, or three or four in a row, or each piece may be used separately. Fashioned of blond oak; heavy glass tops.

needed in this war program than was the case during World War II, when only a minor fraction of them were put into war production. Hardwoods, the industry's main raw material, should not be on the critical lists or in any serious short supply, at least for the time being. Seidman indicated that manpower will probably be this industry's toughest problem.

In other phases of home furnishings, however, manufacturers whose products include the use of metals were not so optimistic. Concerns that make crome dinettes and kitchen furniture planned cutbacks in production of approximately 20% in the first quarter of 1951 due to shortages of nickel and aluminum. All leading chrome furniture lines are on allocation and prices were up generally from 10% to 17% over last June. An industry spokesman told of considerable experimentation being conducted into synthetic enamel finishes to replace chrome plating if and when it becomes necessary.

This same situation obtains in the home appliance field. Appliance manufacturers are already talking of eliminating the "shiny trims" on appliances, due to the pressure of defense needs. A search for alternate materials in the construction of appliances was cited by industry leaders who advise that studies and feverish experiments are now in progress at every major appliance laboratory, seeking adequate substitutes for materials that may suddenly become scarce or "out" altogether.

Leading lamp manufacturers declare that lamp production will be reduced approximately 25% on table models and as high as 50% on floor lamps during the first half of 1951. Some firms have already taken out of their lines models that use metal for anything other than carrying electric current. Where possible, ceramic, glass and wood are being substituted for metal structural and ornamental parts.

According to one of the large lamp manufacturers, bookings in the first week of the market were up 50% from the market of a year ago. Most of the manufacturers have plans to withdraw their lines from further bookings at the end of the market. Lamp prices are up an average of 10% from last June.

Price Increases, Plus Confused Picture

Price increases, forthcoming cutbacks, allotments and possible substitutions — knowledge of these "things to come" prompted retailers to trudge through miles of

Hand Your FINISHING PROBLEMS *to Us!*

It's our business to take over your "headaches"—to diagnose your troubles, prescribe the remedies and make "the medicine" easy to take.

Reliance experience, imagination and resourcefulness enables us to custom-build the finishes for your products—finishes that wear better, look better and are more economical.

May we consult with you? Probably an idea can be evolved that will benefit both of us.

For additional information address 4732 Crittenden Dr., Louisville, Ky.

Rely on

R

showroom samples to pick and buy merchandise. What they found was as confusing as the world picture itself, for it was a market of contrasts — a dramatic swing from stark, bleak, ridiculously simple Modern, on the one hand, to decorator type Regency Beidermeier, Directorie and Empire on the other. Old familiar woods in new colors vied with newer type "Cinderella" woods, which have come out of the kitchen to glamorize high style ensembles.

Everywhere could be seen influences of the times — changes brought about by television requirements; price adjustment "extras"; new designs adjusted to material shortages; and interesting experiment with new materials.

Finishes on Cabinet Woods; Maple, Cherry, Mahogany

Finishes made news along with new uses of cabinet woods. Maple, for example, turned up in a new role, with a new glamour which put it in a top rating. Finished in soft pale tones—quite unlike the traditional maple finish used on Colonial furniture in the past—it was used to give a Provincial tone to Modern and a modern appeal to Colonial. One large manufacturer of maple furniture showed a grouping in natural maple finish described as "four parts of honey and one part of molasses", a copy of an early pine piece found in Lancaster County.

Cherry, meanwhile has lost none of the ground that it gained during the past couple of seasons. A number of new groups were shown in this popular wood, all of them finished in tones that are a variation of soft warm browns. Such romantic names as a "firelight" finish on cherry were included.

Mahogany—in those lines that are planned to appeal to seekers after casual living—stressed russet brown, autumnal and earth tones rather than the dark reds of former years. Topaz and bisque finishes were used instead of the blond of former years.

Oak in Many Finishes; Walnut . . . . and Others

Natural oak — finished in soft brown, in a palomino beige, in clear toned sandstone, fawn and nubian tones—is the Cinderella wood that is being used for fashioning fine cabinet pieces.

Walnut, in beautiful figures, accented the natural beauty of the wood and appeared on many of the new French Provincial groupings in a soft fruitwood color. Platina (platinum) walnut also made a consistent appearance. Many formerly less popular woods such as sonora, Avodire, wormy chestnut, teak, white pine, rosewood and redwood were used.

From a style angle, Modern, like a prima dona who has reached her zenith and thus feels she is entitled to certain eccentricities, stages her portion of the show in the most shocking, naked exhibition of designs ever before encountered. Some items were so simple and so stark that the viewer had the feeling that the epitome of simplicity must surely have been reached, and watched for a waning trend away from the drab into the more ornamented type which could be more favorably featured from a dollar angle. [*Continued on page 62*]

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SYNTHETIC ENAMELS AND PRIMERS
(AIR DRY AND BAKING TYPES)

MACHINERY ENAMELS

DRUM PAINTS

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HOIST and MATERIAL HANDLING EQUIPMENT

METAL SHELVING

- We have always taken pride in turning out products that are more than just satisfactory. They must excel in their field. That's why Spruance primers, paints, lacquers, varnishes and enamels are "specified" by manufacturers of quality finished wood and metal specialties.

  Among the regular users of our synthetic enamels and primers for metal surfaces are:

  Peerless Steel Equipment Co. Penn Metal Corp.
  Columbia Steel Equipment Co. Metalstand Co.
  Yale & Towne Mfg. Co.

- We invite you to let us prove the superiority of our products — particularly if you are engaged in the present defense effort.

THE GILBERT SPRUANCE COMPANY

PHILADELPHIA 34, PA. • WINSTON-SALEM, N. C.

Ultra Simple and Modern; Eccentric Shapes and . . . .

A slab of oak mounted on two white metal X-bases served as a dining table in one Modern showing. In another, two redwood planks, unfinished, placed side by side on a wrought iron base, were featured as a combination dining table, bar and buffet; the two planks, each 14-in. by 7-ft., could be separated and readjusted to a single unit 14-in. by 14-ft.

A desk, highly regarded by the Modernists and bearing the name of a famous designer, features an adjustable slab of wood for a top, a simple unfinished metal perforated basket appended to the bottom, a built-in lamp and other "essential working aids".

Highlighted in the Modern showings was a 4-room house containing the basic furniture essential for a family of two adults with one child, comprising "fanciful dividers" that serve to separate the living-dining room, bedroom and child's room. All the furnishings were merchandised to retail for less than $1800. Claiming that the designs climax five years of postwar research and development, the "house" is said to be a product of the most advanced production techniques. While the designs were most "ingenious"

Free form modern tables made of champagne-finished oak are attractive and useful in the home. Many versions of this free-form art were in evidence at the Chicago furniture show.

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MINUTES MEAN DOLLARS to any manufacturer. That's why over 20,000,000 bright, clean refrigerators have left the factories DULUX-finished! Millions of production hours each year were saved when DULUX was improved 75% in drying performance. Constant improvement in quality—DULUX quality—accounts for a drop in field repair costs of one important refrigerator manufacturer from *22 cents per cabinet*, prior to DULUX, to less than *1 cent per cabinet today*. No wonder DULUX is considered America's leading home-appliance finish!

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STOPPING THEM FOR MORE SALES! Through the years, service-station operators have found that bright DULUX colors on gas pumps and buildings catch the eye of the passing motorist . . . remind him to slow down, turn in. What's more, DULUX keeps its brilliant gloss and color for many months . . . stands up amazingly well to hard knocks, staining and weathering . . . can be washed down easily.

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DULUX Home-Appliance Enamels—typical of the 12,000 Du Pont finish formulas working for industry today

The name DULUX identifies America's leading home-appliance finish . . . a finish that has proved itself on over 20,000,000 refrigerators as well as hundreds of thousands of other home appliances. White-goods manufacturers know they can count on the washability, mar-resistance and color retention of this durable Du Pont product . . . that DULUX-finished appliances give years of sparkling service, complete customer satisfaction in the home.

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ON LAND, AT SEA AND IN THE AIR! Transportation men have found that the long-lasting good looks of a DULUX finish help air lines, bus lines, railroads and steamship companies make the right impression on passengers, shippers and the general public. On this commercial airliner, DULUX White Gloss was used to make identification easy . . . reduce interior temperature . . . keep maintenance-painting costs at a minimum.

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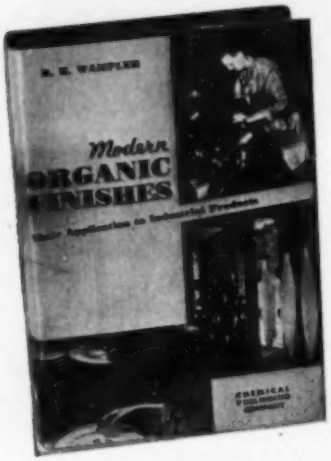

MODERN ORGANIC FINISHES

"Their application to Industrial Products"

This book contains 452 pages of the latest information on finishing. It describes modern finishing materials and equipment for their application, drying, conveying, etc., so that the reader may have an overall picture of modern industrial applications. Throughout, the main emphasis is on proper selection and use of materials to get the best possible finish at minimum cost.

It's Complete — Note the Contents

MATERIALS: Oleoresinous and Alkyd Varnishes and Enamels; Cellulose Lacquers; Spirit Varnishes, High Integrity and Specialty Finishes; Stains, Wood and Metal Fillers, and Miscellaneous Finishing Materials.

MODERN APPLICATION METHODS:

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DRYING METHODS:

The Drying Process—Air Drying; Force Drying; Baking by Convection and Radiant Heat; High-Frequency Baking.

PRODUCT HANDLING IN THE FINISHING DEPARTMENT:

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FINISHING PROCESSES:

Wooden Furniture and Cabinet Finishing; Prefinishing Wood, Plywood and Hardboard Structural Materials; Special Industrial Wood Finishing Problems; Finishing Paper, Cardboard and Fabrics, Finishing Plastics and Resin-Impregnated Wood; Cleaning and Surface-Treating Metals; Finishing Automotive and Railway Equipment; Finishing Sheet Steel Products; Finishing Iron Castings; Finishing Aircraft; Rubbing and Polishing Organic Finishes.

SOME GENERAL CONSIDERATIONS:

Good Practice in the Finishing Department; Testing and Evaluating Finishes.

The price is $8.50 and to eliminate bookkeeping we ask that cash accompany order. Sold on a money-back guarantee. Money refunded promptly and without any questions if you are not satisfied.

INDUSTRIAL FINISHING Magazine

1142 North Meridian Street **Indianapolis 4, Ind.**

they were admittedly "fanciful". One of the room dividers consisted of a unit made of plywood "dimpled" to give added strength and set into a metal framework supported by wire struts.

Traces of Ornamentation on Some Simple Designs

Free form, like free thought, dominated much of the modern picture with eccentric shapes calling attention to modern art in its more advanced form. Yet, like the answer to an unasked question, signs of embellishments made a shy appearance in a few of the large volume lines whose designs set the pace for some phases of the industry. Here and there the trained eye found a panel of carved wood in simple modernized floral or fruit design applied to the front of a case piece of otherwise simple design; some models went so far as to add a bit of tint to the carving for a really dramatic effect.

Traditional Designs With Rich Ornamentation

At the other extreme was a first time showing of the more elaborate designs of the Directoire and Empire periods. Rosewood tops and much brass ormolu were features in unusual tables on which motifs such as Roman heads and wreaths have been used as decorative accents. French Provincial groupings for every room were stronger than at any previous market. Heavier looking pieces of the Regency Biedermeier were also in evidence, richly ornamented with gold tooled leather tops. Documentary pieces and authentic English reproductions—each piece hand finished to reproduce a rare patina characteristic of fine antiques—were in evidence.

Some inlays and extras made their appearance in the traditional lines. Fine veneer work of natural figured woods and considerable inlay of rare woods showed a trend in that direction.

Triangular Corner Tables; Lazy Susan; Television

New pieces shown consistently enough to establish themselves as a possible trend, included large triangular corner tables, some models 4-ft. from corner to corner. These were offered in traditional designs and finishes. Lazy Susan type inserts in cocktail and dining tables were stressed, the revolving trays being cleverly worked into attractive serving units.

Television influences were seen in sectional cocktail tables made up of individual units and fitted together. Many living room chairs were equipped with casters for easy manuevering. Some swivel type chairs were shown. Sectional sofas were the order of the day.

Among the new designs adjusted to material shortages were case pieces with wood pulls; plastic blocks and heavy glass for tables formerly fashioned of wood; extensive use of plastic in the form of caneing for trims; dining room table tops of structural glass or cork; lamps cleverly fashioned of ceramics; colorful plastic sheaths on metal tables and chairs, and knocked-down chrome chairs with slip-on backs and clip-on seats for home assembly, designed to save time and labor and cut down on freight and warehousing. [END]

How you can save on product marking costs!

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Glidden specialists in the screen process field can show you the most modern and economical methods of applying any design in any number of colors on any type of surface. And, Glidden High-Gloss Screen Process Colors offer you:

★ Cleaner, more vivid colors
★ Extreme ease of use
★ High-gloss finish
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For further information, write
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"The Silk Screen Printing Process"

By J. I. Biegeleisen and E. J. Busenbark

THIS LATEST book on the subject covers everything that is worth while to have in book form about the silk screen printing process. It covers in detail all of the equipment, printing apparatus, tools, etc., and the paints and materials that become the finished product; tells how to select them for various purposes and how to handle them for best results.

Information is given about the reproduction of printing and art work by this process on various surfaces such as paper, cardboard, cloth, felt, wood, metal and composition materials. Also, the making of drawings and stencils, finishing work, estimating costs, shop management and recent developments.

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SHORT CUTS IN MAKING

Screen Process Stencils

By MILTON GRANT
President, Silk Screen Process, Inc.

Letters, figures and other characters in a variety of styles and sizes are available.

THOSE OF YOU whose chief business is in screen process work are probably familiar with the majority of present day facilities for fast, economical stencil production. However, those who use screen processing only as an adjunct to product finishing, or for the decoration of various products, may find some of these short cuts both interesting and profitable.

Alphabet sheets and pads of printed letters are now available; also numerals and characters such as question marks, commas, exclamation, quotation and percent marks, stars and arrows in many different sizes and fonts. Given a rough sketch, the operator can quickly and easily make up the finished art from which the stencil may be cut. Stock letters and characters are perfectly formed and show through the stencil film as well and perhaps better than custom hand-lettered work. Transparent letters and characters are also available for photographic stencils.

Enlargements? Reductions? Photostats Save Time

Another short cut in stencil making is the use of photostats. This process is especially valuable where

the size of the desired stencil is larger or smaller than the original drawing or layout. The cost of the blown-up or reduced photostat is less than the cost in time of enlarging or reducing the original by hand. Another point in favor of using the photostat is that last minute changes may be made in the copy. This can be done through the use of printed alphabet letters, numerals and characters on the original before it is photostated.

Photographic Stencils May Prove Economical

Photographic stencils should not be overlooked. In some cases it is more economical, from the standpoint of time, to use this type of stencil. Through the use of transparent letters and characters it is possible to lay out the original copy, then strip-in a halftone illustration and, by contact, produce the positive which in turn will be used to make the photographic stencil.

A dark room is not required for this operation. This is made possible through the use of auto-positive film which is available in rolls 20-in. wide and 30-ft. long. The positive is made by exposing the film, with the layout in place, either to an arc light or to a No. 2 photoflood lamp. This is developed similar to a "blueprint". When dry, the positive is used with carbon tissue to make the photographic stencil. All the work may be done without the use of a dark room.

Combination Stencils Can Save Time

On jobs that combine copy with a halftone illustration, it is sometimes more practical to hand cut the copy. It is possible to combine the hand cut stencil with the photographic halftone. This will save one run in processing and, in some layouts, any difficulty in registration.

In the event that it is difficult to combine two types of stencil film on the silk, it is possible to use ruby positive cutting film for the hand cut letters or design and leave the letters in where the color is to go through instead of peeling them off. The photographic positive is then stripped-in and the whole is photographed on carbon tissue to make the completed stencil.

"Al" Stresen-Reuter Becomes President of Company

Alfred P. Stresen-Reuter has recently been elected president of Fred'k A. Stresen-Reuter, Inc., of Chicago and Bensenville, Illinois. His father, F. A. Stresen-Reuter, founder of the company, has been made Chairman of the Board. The company is celebrating its 40th Anniversary.

"Al" has been associated in business with his father for the past 17 years, having been first employed as a worker in the Bensenville plant stacks. He was elected president of the Chicago, Paint & Varnish Production Club in 1943. Later that year he was called into military service. After the war he returned to the business in the capacity of manager in charge of sales and production.

REPRINTS AVAILABLE!

Paul Blackmore's 12-page article entitled

"HOW MUCH IS A GALLON OF PAINT WORTH"

as published in the August, 1950, issue of this magazine.

PRICE 10 CENTS PER COPY—

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INDUSTRIAL FINISHING Magazine

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And NOW . . . PERFECTION offers LACQUER . . . FLATTENED BY SYNTHESIS . . . giving the MOST POSITIVE rubbed effect appearance . . . in grades to suit your pocketbook and drying time.

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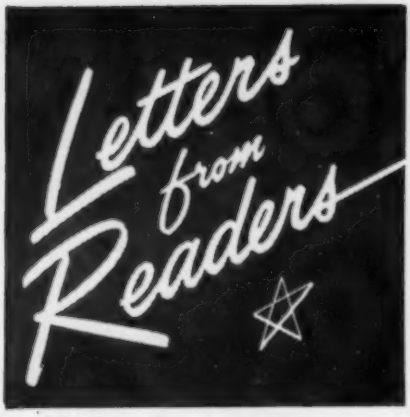
WATER PROOF LIQUOR PROOF



Dip-Coating Bottles?

We would appreciate any type of information that you may have in regard to a dipping process for glass. We use the Peacock Spray process for a silver mirror like finish on bottles, and must cover this with a lacquer coating to prevent oxidation. At the present time we are using just a conventional spray unit, but are interested in a dipping process. —*B. A. Co.*

Probably an automatice spray machine would do a better job faster and cheaper, if you have large production. In a letter we are submitting names and addresses of automatic spray machines—and dipping machines.—*Editor.*

Wet Tumbling of Metal

We are eager to obtain information on "wet tumbling". Dry tumbling is well known to us as a means of preparing metal surfaces prior to painting but, unfortunately, the resultant surface is such that it calls for further chemical treatment such as "Bonderizing" before paint can be applied.

It has occurred to us that these two processes might be combined, using a phosphating chemical; but, before proceeding along these lines, we would like to know if such an operation has been tried and if the results and observations have been published.

While primarily we are interested in data covering "wet tumbling", any general information on tumbling which has been printed in your magazine will be of interest to us. If nothing has been published along this line, your remarks concerning the above would be of extreme interest to us.—*M.S.B.*

We haven't published much about "wet tumbling", but are referring you to concerns who have equipment that may interest you.—*Editor.*

Electric Paint Stripper

I am interested in the address of a manufacturer of electric paint strippers.—*T. H.*

Try Lectro Weld, Inc., 2189 W. 26th St., Cleveland 13, Ohio.—*Editor.*

I. F. Article in Demand

From time to time, the United States Army Signal Corps finds it would be helpful to be able to reproduce extracts from *Industrial Finishing* for official purposes.

We would, therefore, be grateful if you would give the Signal Corps permission to make reproductions . . . . with the following assurance as to the limited use which will be made of this permission:

1) Reproductions will be used for official purposes only and will not be distributed outside the agencies of the United States Government.

2) Not more than ten copies will be reproduced of any extract, article or illustration. [*Continued on page 74*]

Lacquer

PUBLISHED PERIODICALLY BY HERCULES POWDER COMPANY IN THE INTERESTS OF BETTER FINISHES AND FINISHING

Angelus Furniture Mfg. Co. Says... "Hot Lacquer Beats Any Other Finish"

Hot Lacquer Gives Angelus Furniture Finishes More "Build" With Fewer Gun Passes

From a 10-acre Los Angeles plant, Angelus Furniture Manufacturing Company is bringing into countless homes Early American Traditional Masterpieces through modern mass production methods. Only recently, this company further stepped up its mass production efficiency, made the quality of its finishes even better—by changing to the hot-spray lacquer process.

Mr. Henry Grieninger, Supervisor of Finishing Operations for Angelus, is enthusiastic over his company's changeover to the hot-spray lacquer process. Comparing hot lacquer with the regular cold lacquers which Angelus used for many years, and with low-bake synthetic finishes which were also tested, he says, "The most important reason why we go for hot lacquer here is that one coat equals one-and-a-half or even two coats of ordinary lacquer. The high solids in hot lacquer do not penetrate as far into the wood as does cold lacquer during the cooling out process. Consequently, hot lacquer films have an extra 'build' on the surface. This superior surface gives us a better sheen, cuts down the cost of rubbing in some cases as much as 50%. Hot lacquer lays on nicely with much less overspray, and much better coverage. Hot lacquer retains all the advantages of easy 'touch-up' characteristic of cold lacquer and introduces no repair difficulties. We are saving all along the line in finishing material, thinner, operating overhead; and getting fewer rejects, better quality finishes."

Hot lacquer finishes have all cold lacquer's unique combination of properties including fast-dry, ease of sanding and polishing, print resistance, and variety of finishing choices. In addition, Angelus found that its glossy hot lacquer films are much more impervious to cold checking and cracking.

Free Booklets on Hot Lacquer

Hercules offers detailed information on hot lacquer, the types of heating equipment available, and the performance record of hot lacquer in many industries. There is also promotional material that can be used by lacquer manufacturers. Write for copies of current literature.

HERCULES POWDER COMPANY
INCORPORATED
928 Market Street, Wilmington, Delaware

Workman gives a table the gun with hot lacquer.

Front view of main building of Angelus Furniture Manufacturing Company, Los Angeles, California. One of the largest and most complete plants of its kind in the west, the company occupies an operating floor space area of 350,000 square feet.

CL51-2

3) Proper credit as to the publication and the author will be given with respect to the reproduction.

This general permission is being asked in order to minimize our requests for specific permission to make a certain reproduction.—*Signal Corps Center . . . .*

Permission granted.—*Editor.*

We Make "Plastic Metal"

We noticed an item entitled, "Plastic Metal; Where?" in December 1950 issue, page 76, and would like to acquaint you with products of this type that we manufacture.

Our best known material is No. 22, described in the data sheet which we are sending you. To the best of our knowledge this is the original material described as "Plastic Metal". It is the toughest, most adherent material of this type which has come under our observation, and scientific tests made by us, as well as by many testing laboratories, have shown it to be superior in durability to the other products of this type being made.—*National Engineering Products, Inc., Washington Bldg., Suite 435, Washington 5, D. C.*

Flock Information

We are contemplating entry into all phases of flocking, and have been advised to contact you concerning literature available on this process. We are interested in articles by J. Donald Bostrom.—*J. Enterprises.*

Information sent.—*Editor.*

We Want Flock Cutters

Referring to Dec. I. F., page 76 (first column near top) we are interested in the three cutters available for cutting continuous filament, as we are considering extending our production. We should be pleased to receive the fullest details of these machines.—*Spraytex (Manchester) Ltd., England.*

In a letter we are identifying "F. M." so you can contact the company direct.—*Editor.*

Fire Article in Mexico

Thank you very much for your letter of permission. The article, "Fire in the Finishing Room", (Oct. 1950 issue of I. F.) was translated and presented as you recommended. Our Fire Department has sent a letter of congratulation for the information it embodies.

A copy of the translation is being sent to you.—*Cia. Sherwin-Williams, S. A., Mexico, D. F.*

Marine Equipment Paint

In the development of some marine equipment for a special job we have encountered a difficult problem in the procurement of a suitable protective coating that is highly resistant to seawater. Perhaps you have had previous experience of a similar nature and have some information on water-resistant protective paints.

Briefly, the requirements are that the coating should be of a paint-like nature which can be either sprayed or dipped. It should be capable of withstanding storage under all temperature and humidity conditions from about —40° F. to 180° F. without deterioration or cold flow. It should have high electrical resistivity and should maintain this resistivity throughout a 3-month period of immersion in seawater.

We have tried several materials, the most successful of which is one

CAPABLE

We take a great deal of pride in the fact that the men in our plant are "Capable". They have a capacity for solving the problems that our customers face in developing just the right industrial finish for their products. The men at Mansfield Paint know how to work with manufacturers to meet exacting specifications.

The MANSFIELD
PAINT COMPANY
Mansfield, Ohio Chicago, Illinois

FINISHES FOR INDUSTRIAL PRODUCTS

called "Vulcabond" which does seem to meet these requirements, but without as much design margin as we would like, and at a rather high cost since many coats must be applied. If you have any information on material which your experience would indicate might be more satisfactory and which you are in a position to release, we would be most grateful to receive it. —*D. C.*

Who can supply a material to meet these specifications?—*Editor.*

Finish for Vinyl Plastic

While looking through an old copy of this magazine (July, 1950) I came across an article on page 8 entitled, "Finish for Vinyl Plastic". If there is any information on this which you can supply me, I would appreciate receiving same.—*Process Supply Co.*

Our reference on this is Plasticloth Products, Inc., 920 Broadway, New York, N. Y.—*Editor.*

Conveyorized Dipping

Could you give us names of companies manufacturing conveyorized dipping equipment for small parts and handles like handles for chisels, etc.?—*H. B.*

We believe that almost any of the conveyor people could supply this for you—and in a letter we are submitting the names and addresses of several of them.—*Editor.*

Graining Plates

We are contemplating purchasing an automatic graining machine of the type made by the American Richwood Products Co. In order to use this machine to its fullest advantage, we should have a number of graining plates, and we are wondering if you could give us a list of the manufacturers of graining plates.—*P. S. Co.*

It would be appreciated if you would put us in touch with a source of supply who could furnish graining rolls to be used for transferring the wood grain effect on metal. We need rolls approximately 12-in. in diameter and in various wood grains.—*V.B.Co.*

The company named in the first inquiry can supply graining plates, see advertisement in recent issues of this magazine.—*Editor.*

Animal Hair Flock

Where can I obtain animal hair flock? Also, chemically purified wood cellulose fibers? These materials were mentioned in the article on flock in the August 1950 issue.

The electrostatic method in flocking is of interest to me in my particular field and I would appreciate information on who to write to in connection with a lease arrangement. —*K. Studios.*

On your question No. 1, we are referring you (by letter) to the leading manufacturers and suppliers of flock (see advertisements in I. F.).

For question No. 2, we refer you to Behr-Manning Corp., Troy, N.Y.—*Ed.*

Centrifugal Machines

Referring to your March 1950 issue, at the conclusion of the article on page 36 covering, "Painting Coil Springs in Centrifugal Machines", you state that various machines are on the market with improvements over those used in the article. We are interested in this type of equipment

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ORIGINATORS AND MANUFACTURERS OF THE UNUSUAL IN *Industrial Finishes*

FOX POWERCHARGER

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YARNALL PRODUCTION FINISHES meeting MILITARY SPECIFICATIONS

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YARNALL PAINT COMPANY

INDUSTRIAL DIVISION

PHILADELPHIA 43, PENNSYLVANIA

and would appreciate your giving us the names of the various manufacturers of this type of equipment, so that we can get in touch with them. —*F. Enameling Co.*

In a letter we are naming two such concerns, both of which advertise in this magazine.—*Editor.*

Cleaning; Phosphatizing

Recently we noted in the *Letters from Readers* section of December 1950 issue of *Industrial Finishing*, a letter referring to an article in the Oct. 1950 issue, pages 24-28. This article was about the cleaning and phosphatizing of metal surfaces prior to painting. Because we did not receive a copy of this particular issue we are at loss as to the name of the manufacturer of this cleaner and would appreciate your forwarding this information to us.—*C. Mfg. Co.*

We are sending you a copy of Oct. 1950 issue, which contains the article and one or more advertisements about the product in question.—*Ed.*

Steel Container Painting

In the February 1949 issue of this publication, we saw an article by Morris Fox of the Reliable Steel Drum Co., regarding reconditioning and painting of steel drums. We would like to know mailing address of that company so we can write them to get information regarding the source of machinery they use.

We are also interested in learning from you the names of manufacturers of equipment for outside finishing, painting and baking of steel containers and also the application of sanitary lining coat on the inside of open head steel drums and the method used to bake this on.

We are in the process of gathering information for the building of a complete drum reconditioning plant here in Texas, and in addition to the regular closed head 55-gallon drum we want to have a section that will be able to apply the sanitary lining to food containers which we will recondition and bake this lining on in the required manner.

Your publication is most interesting and information and any help that you can give us will be greatly appreciated.—*M. S. C. Co.*

Information supplied by letter.—*Ed.*

Spraying Hot Lacquer

We have received some additional information which may prove to be of interest in connection with James A. Bede's article about "Hot Spraying of Lacquer", which appeared in Dec. 1950 issue of this magazine.

A survey has been conducted by The Hercules Powder Co. of Wilmington, Delaware, among manufacturers known to be using paint heaters. A questionnaire was mailed to 325 companies.

On the basis of reports received, there is over 200,000 gallons of hot finish being used every month. From firms who have responded to the questionnaire the following benefits of hot finish were indicated:

70% report material savings
70%, reduced cost of application
65%, better quality of finish
76%, labor savings
18%, reduced rubbing or polishing

The following additional advantages were written in by those replying to the questions: no blushing; quicker drying; better gloss; reduced sagging.

This information is taken directly from a report by The Hercules Powder Co. and is authorized for use . . . so you may feel free to use the above information.—*Stedfeld & Byrne, Inc.*

Can YOUR Lacquer Do This?

NCP11 Gloss Lacquer Takes 25 Cold Check Cycles Without Cracking!

Here's the high gloss furniture lacquer to end all your lacquer problems! Tested in actual service over a period of years, it has come through use and abuse with flying colors. Tested under the laboratory cold check cycling system, average lacquers cracked in 1 to 2 cycles . . . NCP11 took 25 cycles without cracking. Use this lacquer once . . . and it will always be your lacquer.

NCP 11 High Gloss Lacquer took 25 cold check cycles from 120 degrees to minus 6 degrees Fahrenheit.

CHECK THESE GREAT FEATURES!

★ Excellent Print Resistance
★ High Lustre ★ No Orange Peel
★ Can Be Hand Or Machine Rubbed
★ Can Be High-Speed Machine Polished

★ *SEND FOR A 5-GALLON TRIAL ORDER AT REGULAR DRUM PRICE*

The National Chemical & Plastics Co.

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To Remove Baked Finish

One of our customers has a problem to do with removing a baked synthetic finish from racks used for holding work in a dipping operation. These racks are placed in a solution which softens the finish, but does not entirely remove it. They are looking for some type of machine which will wash these racks and force the dissolved finish from them. I would assume that this would involve a forced water action rather than a tank agitation. Can you put us in touch with a manufacturer of such equipment? —*W. V. Co.*

This may call for some kind of force jet or spraying arrangement in addition to the softening process. A few of the manufacturers of this pressure jet equipment are named, along with their addresses, in a letter we are sending you.—*Editor.*

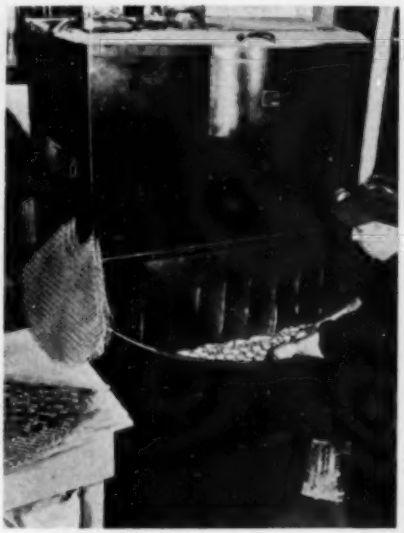
Special Paint Wanted

We want an air-drying, non-metallic paint to use on metal ingots for identification and to prevent oxidation of metal. Objects are to be coated by dipping; have irregular contour surface, about 2x3½x7-in.

Color preferred is red, with possibly blue, green, black as additional colors. Suggest lithol red in an air dry vinyl emulsion; perhaps a red vinyl emulsion water paint.—*X. Metal Corp., N.Y.C.*

Finishing Fine Medals

SKILLED craftsmen of Medallic Art Company, New York City manufacturer of fine medals, plaques, and medallions for industry, schools, government, and religious organizations, uses automatic sand blasting equipment to clean and condition metal surfaces for finishing.



Small metal medallions laid on wire mesh trays are then placed on the exposed part of a revolving turntable that carries them through a sandblasting cabinet.

When working on small medals, ranging in size from ½ to 5-in. in diameter, the sculptor's original design is transformed into a set of steel dies which are used to stamp out the individual pieces from strips of metal. The stamped pieces are then sand blasted to produce an over-all matte or dull finish. The rotary sand blasts used here process these pieces on a circular revolving table which passes through the action of air pressure and flint abrasive. As many as 1200 to 1500 pieces, 1¼-in. in diameter, can be completed in one hour. After blasting, the pieces are darkened by chemical oxidation and then relieved by hand rubbing with wet pumice which brings out the highlights and adds beauty and definition.

Story and picture furnished through courtesy of Leiman Bros., Inc., 150 Christie St., Newark 5, N. J.

Fixture Illustration Courtesy
H. A. Framburg & Co.

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Quality Finishes

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LIGHTING *and* LAMP INDUSTRY

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- LACQUER ENAMELS
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CLEAR, TRANSPARENT COLORS OR ENAMELS

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WHY JEOPARDIZE YOUR REPUTATION WITH INFERIOR FINISHES WHEN THE FINEST COST NO MORE?

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INVITATION

Yes, this is an invitation to Furniture manufacturers from a furniture man whose farsighted thinking has made available economies in labor and space in furniture finishing that is sweeping through the industrial plants from Coast to Coast.

Now you can see first hand in practically every section of the country where furniture is made, the startling results of a DeBurgh Finishing System installation.

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Why Refinished Job Stays Tacky

When refinishing furniture we often find that our new finish doesn't dry satisfactory. It remains tacky. We feel that we do a good job of cleaning and sanding the surfaces before putting on the new finish. What would you advise?—*R. C.*

At some time or other all refinishers have run into this headache. The only solution is better cleaning, or switch to a wax-free remover. The trouble is generally caused by the amount of wax that remains on the wood after stripping off the old finish. Here are two methods that are quite successful:

1) After removing the old finish and cleaning the surface, dip a medium grade of steelwool into naphtha and clean the surface with this. Go over all of it carefully and thoroughly. Then wipe the surfaces dry. Follow with steelwool dipped in alcohol; scrub the surface with this also. Wipe dry; let the job stand for about half an hour; sand all surfaces smooth, and proceed with finishing.

2) After removing the old finish and cleaning the surface, rub it with steelwool and naphtha, and wipe dry. Then make a strong Gold Dust soap solution and use it hot; or use a trisodium phosphate solution. Scrub the surfaces with steelwool and this soap solution; then rinse with clean hot water. Be careful when working on veneers; avoid soaking wood too much. Do only a small section at a time and rinse immediately. After rinsing, follow up by rubbing with steelwool and alcohol. The alcohol will tend to absorb the excess moisture and the treated surfaces will dry out quickly. After the surfaces are dry, sand and finish.

The No. 2 method is longer, but is practically foolproof. This treatment will also help lighten the wood in color, so that finisher can make a better color match.—*Ed. Hogstrom.*

Cleaning Old Finish From Carvings

In the refinishing of old furniture, we have long tedious work in sanding clean carvings, turnings, flutings, etc. Is there any tool that may be used on this work? What about sandblasting? I have heard that this is used to sand furniture in factories. Where could I find out about it and what equipment is required and who supplies it?—*K. D.*

This problem is with every refinisher. Flutings are not too difficult, as a medium grade of steelwool, dipped in either lacquer thinner or alcohol, will clean these out pretty well —that is after you have removed as much of the old finish as possible with varnish remover.

Many finishers save their old worn brushes, trim the short bristles even, and use these stiff short-bristle brushes to clean the softened finish (softened with remover) out of carvings. You can get steel wire brushes of a finer grade than those used by machine shops, and these finer steel

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wire brushes will clean out carvings without injuring the sharp detail of the wood carvings. I have seen rotary wire brushes (attached to a power driven flexible shaft) used for this purpose. An extremely fine grade and size of wire was used so as not to damage the original detail.

I believe that sand blasting is definitely out for this work, as the force of the fine flying abrasive would destroy the original clean-cut detail. Sand blasting will cut into soft wood rapidly, and used on hardwood it will cut away the softer portions of the wood and leave a rough textured surface. Sand blasting of wood is chiefly for producing special effects, and for the rough texturing of hardwoods. Yellow pine is one wood that takes sand blasting well, as the hard rosin sections stand out while the softer sections are rapidly cut away by sand blasting.—*Ed. Hogstrom.*

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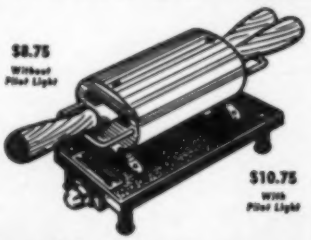

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Why Does Patch Swell?

In burning in dents, when doing over old furniture, we use lac sticks (similar to shellac sticks). This is on jobs where the old finish is not removed. After sanding the spot we pad it or french polish it, using ether varnish, and then spray on a coat of pyroxylin lacquer. The question is, how to prevent the swelling up of the patch and the area around the patch which the hot knife acted on when the lacquer is sprayed on as a final coat. —*R. W.*

The skillful use of lacquer sticks is supposed to overcome this condition, but sometimes a little trouble develops. The method you use is good practice in the refinishing field. To solve your problem, I suggest that you use the following method:

After cleaning the damaged place and burning in with lac stick, shave off or block sand the patch to bring it down level with the adjoining surface finish. French polish the patch, and let it stand for half an hour; then steelwool the patch to remove excess oil. Mix a little top lacquer with an equal quantity of lacquer thinner and, with low air pressure, spray a fine mist coat on the patch only. Adjust the air pressure and spray gun so that the fine mist coat of lacquer will become practically dry in a few seconds. You continue this for a half minute or so and build a

finish on the spot. When the spot patch coat is thoroughly dry, a wet coat of top coat lacquer can be sprayed on, and it will not attack the patch.—*Ed. Hogstrom.*

Tumbling Process For Wood Drawer Pulls

In the November issue of this magazine, on page 102, an inquiry entitled "Can Drawer Pulls be Finished by Tumbling?" was presented by a Furn. Mfr. and answered by E. G. Sederquest of Burgess, Fobes Co. The general import of the answer was that it is not feasible to tumble finish the drawer pulls because of the abrasive action of the parts in the barrel, and because of finish drying problems.

In our opinion, as a manufacturer of tumbling barrels and supplies, such an answer, which may prove to be entirely correct, cannot be accepted without challenge in part. The cost savings in labor and materials possible through the use of tumbling, either as a complete finishing schedule or as part of a finishing schedule, are great enough to warrant a thorough study in both theory and actual practice. It has been our experience that parts which are theoretically unsuited to tumbling often work satisfactorily when tried under actual conditions.

We feel that:

1) The finishing schedule might be reduced by one or two steps.

2) The pulls could be tumbled in the raw state to a smooth finish, as a preparation for the coating.

3) It is possible to completely tumble this finish.

4) We would like to discuss this matter with the manufacturer in question.

We will appreciate it if you will furnish us the name and address of this manufacturer so that we can get in touch with him.—*Lupomatic Ind.*

The Talk of The Industry

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Nu Glo Patching Sticks do not swell or raise, nor pull out during rubbing! This material has been in the field as a production item for over four years and is gaining in popularity each day!

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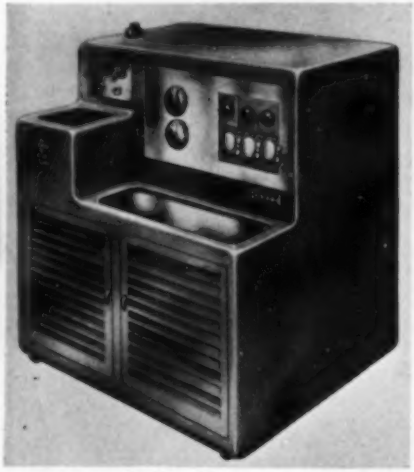
Hot-Cold Test Stand

The latest addition to the Emdco line of testing equipment built by Electro Mechanical Devices is the Hot-Cold Test Stand. This unit will produce any temperature between minus 70° F. and 230° F.

The Hot-Cold Test Stand is the solution to one of the problems of many manufacturers of aircraft components. Producers of aircraft parts are frequently required to determine operating characteristics of the subassemblies at temperatures equivalent to those encountered in actual flight conditions. These temperatures which range from a high of 230° F. to a low of minus 70° F. are now available in the Hot-Cold Test Stand.

Designed for testing small aircraft parts, the Test Stand has a deep well which can accommodate parts measuring up to 6x6x8-in. The item to be tested is simply placed in the deep well and the thermal selector is set at the desired temperature. The deep well is then chilled or heated to the selected temperature. The part under test assumes the temperature of the deep well and can then be withdrawn and checked for operation.

For further information, write Electro Mechanical Devices, Division of George L. Nankervis Co., 19255 W. Davison, Detroit 23, Michigan.



Enables you to find out how well parts or products withstand heat or cold.

New White Bake Enamel

The Industrial Finishes Division of Central Paint & Varnish Works, Inc., 59 Prospect St., Brooklyn 1, N.Y., announces the development of a new synthetic baking enamel which greatly reduces the nuisance and damaging properties of overspray exhausted from dry spray booths.

Conventional paint overspray from most dry spray booths has, for many years, been the cause for much grief to some manufacturers in congested areas. The coating of automobiles, canopies, windows, etc., with a sticky adherent film has been almost completely eliminated with the use of Central's No. 8878 Base.

This product, No. 8878 White Baking Enamel, has been formulated to produce a non-adherent spray dust when atomized and exhausted, and has been found in actual use to function consistently in this manner. The

Mac's FASHION SEALERS & LACQUERS

A specially formulated sealer for the first coat under clear gloss or flat lacquers provides a good body and sands easily. Also works well under varnish and enamel. A production test will prove its superiority.

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"THE SCIENCE OF WRINKLE FINISHING" (204 pages)	5.00
"THE SCIENCE OF MODERN WOOD FINISHING" (386 pages)	6.00
"PAINT & VARNISH TECHNOLOGY" (500 pages)	8.00

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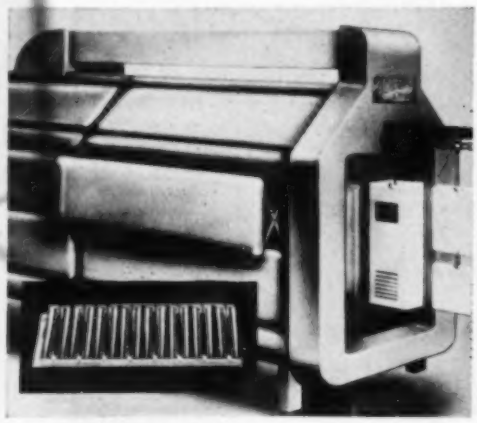
spray dust does not adhere to finished surfaces, but instead resembles the appearance of atmospheric dust which can be easily wiped off, or is carried away by the wind.

Part of the secret involved in this baking enamel is the high solids content at low working viscosity. High solids, combined with excellent hiding and fast curing properties, are features of this new material.

Electric Oven for Baking Paint on Metal

A new type of industrial oven construction composed of electric heater panels and standardized frame members is announced by the Advance Heating Division of Jensen Specialties, Inc., 9331 Freeland, Detroit 28, Mich. It introduces the use of high efficiency rod-type heaters mounted on insulated oven wall sections. This combines high-speed radiant heating with temperature-controlled convection for industrial heating and drying operations up to 700° F.

New Advance oven, showing panel extended for servicing. Insert below: The working side of this panel with rod-type electric heaters and reflectors.



Ovens of any size, shape, and heat capacity can be field-assembled from standard parts by electric maintenance personnel. Rod heaters of any standard brand name may be specified. When equipped with approved controls and ventilation, these ovens comply with latest industrial oven standards.

The manufacturer provides engineering service to guide proper selection and use of the equipment. The ovens can be enlarged, extended, or dismantled when and as required, simply by the addition or removal of standard parts.

To increase the output of continuous-type ovens and driers now in use, these electric heater panels can be added at the entrance end. From 4 to 40 kilowatts of heat may be installed in each Advance 26x84-in. panel.

Iridescent Pearl Flakes

Many attempts have been made to reproduce iridescent effects or imitate them in decorative coatings. One company has developed certain products that permit the application of iridescent effects to a variety of materials. These products are divided into two groups. The first group comprises iridescent materials recovered from natural products (chiefly the nacreous layer of certain sea shells) and presenting them in a form suitable for application to surfaces either by "flocking" or incorporating them in vehicles so that the mixture may be applied as a paint or lacquer.

The second group comprises products designed to reproduce conditions that will cause light interference with its resulting iridescence.

Iridescent Pearl Flakes, recovered by special chemical processing from the nacreous layer of oriental sea shells are available in three different sizes. This form of I.P.F. is well

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And it's a good thing we are, for as conditions change, specification finishes demand change too. Here at Egyptian our laboratory staff have been working around the clock to bring our government specification formulas up to date.

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adapted to many applications in display work where it can be "flocked" on to paper, cardboard, cloth, metal, wood or plastic surfaces. As a binding agent the manufacturer recommends the use of his D/40 solution, since it is colorless.

Iridescent pearl flake silicated is the same nacreous material coated by special chemical treatment with silica. This has resulted in a product that displays more brilliant colors and is chemically inert to practically any reagents with which it might come in contact. It may be used in the same manner as I. P. F. natural and is especially recommended for incorporation in clear varnishes, lacquers or enamels. The I. P. F. silicated may also be incorporated in most plastics. It will withstand baking at temperatures even slightly at 500° F.

These materials are products of The Decker Corp., Glenside, Penna.

Durable Clear Lacquer

A new clear lacquer that provides extreme durability and color stability has been introduced by the United Lacquer Mfg. Corp., Linden, N. J.

Developed originally to give a lasting, rugged finish to school desks, this new clear lacquer AO777A may also be used on cribs, end tables, cabinets and other furniture.

When applied over a sealer base 40916, on wood and other materials, the lacquer provides a tough film that resists abrasion and changes of color.

Extensive tests have shown that the new lacquer also resists water discoloration. When pads soaked in distilled water were placed on a wooden block finished in clear lacquer AO777A for 18 hours, there was no discoloring or surface dulling. The lacquered surface also has withstood repeated abrasion tests.

Clear lacquer AO777A is available in flats, gloss or sheen.

Dollar Striping Tool

The new low-priced striping tool illustrated here draws straight, curved, circular and parallel lines in any color on any smooth surface. The guide can be set to run along beads, mouldings, straight and curved edges, etc. The striper can also be used free hand or with a curved template. The workman simply guides the tool, and the tool lays the stripe where he wants it. With a little practice it's easy to use. It works like a fountain pen; uses paints, lacquers, synthetics, liquid bronzes, etc.

Features of interest to practical users are: Tubular glass fountain holds visible paint supply; leak-proof operation; thumb and finger rests make it easy to hold and guide the tool; adjustable guide bar; swivel head; working parts are easily disassembled for complete thorough cleaning without special tools. Seven wheel tip sizes range from 1/64 to ⅛-inch wide.

This new simplified striping tool is a product of the Wendell Mfg. Co., 4234 N. Lincoln Ave., Chicago 18, Ill.

Chemical Dip Finish

Announcement is made by the Chemclean Products Corp., 64 Sixth Ave., New York 13, N. Y., of a new material for finishing aluminum, either as a base for paint or to protect the bare metal from corrosion.

This material, called Protecto-Cote, is provided ready mixed and needs only to be dissolved in water, 6-oz. per gallon. The work is immersed in the solution at 185° F., remaining in the bath about five minutes. No elec-

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tric current is required. The equipment consists only of steel tanks with facilities for heating. The solution is "self-cleaning", making the process a one-operation job. Control is simple and easy. Cost of operation is very low.

Protecto-Cote may be used on machine parts as well as decorative consumer products, since no dimensional changes take place and close tolerances are not disturbed. As a base for paint, a high degree of adhesion is provided and the corrosion resistance is of a high order.

New Adhesive for Woods

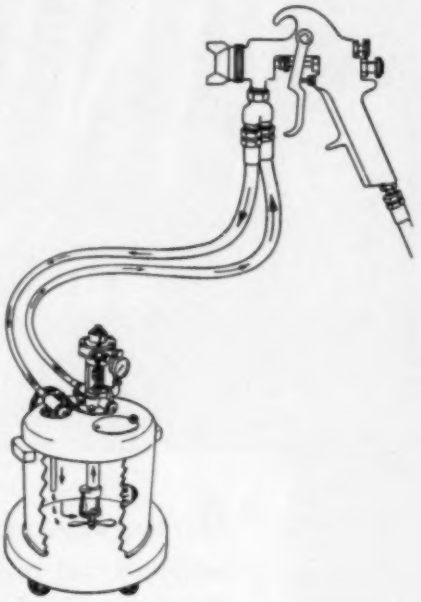
Adhesive Products Corporation, 1660 Boone Ave., New York 60, N.Y., announces the development of a new adhesive for the woodworking industry to replace polyvinyl acetate which is in short supply.

The new product, "Stix" adhesive, has better waterproof qualities than polyvinyl acetate and is more resistant to shock. It will also adhere wood to rubber, plastic, metal and other surfaces. With "Stix" it is also possible to eliminate the use of clamps in many woodworking operations.

Agitates Metallic Paints for Circulating Setup

A simple but effective spray painting setup for spraying metallic paints, or any materials that have a heavy pigment which is inclined to settle quickly upon standing, is announced by Gray Co., Inc., 14 Graco Square, Minneapolis 13, Minn.

A quick understanding of the setup can be grasped by referring to the accompanying drawing which illustrates the company's "Paintmaster". The Paintmaster which fits over an open-top paint container, carries all the mechanism for continuously stirring paint at the bottom of the container and pumping it through the paint circulating hose which extends to and from a spray gun. Small covers are available for 5-gallon containers, and large covers for 55-gallon drums.



This diagram shows gentle but positive agitation of paint at bottom of tank plus even-flow pumping of paint up through one hose to spray gun; and back through a return line of hose into tank for material to be sprayed.

Constant agitation in the container, plus circulation in the two hose, assures perfectly mixed paint at the spray gun nozzle. Even though actual spraying is intermittent, the metallic paints will not settle out because the positive but gentle agitation and circulation is continuous; this keeps the paint perfectly mixed and free of air bubbles inside the tank.

An air pressure gauge and connections for the compressed air line are included with the "Paintmaster".

No. 2 of a series depicting method for perfect wood finishing with Sundstrand Sanders.

Wash Coat Sanding Fast and Effortless with Straight-Line Action Sundstrand Air Sander

Removing raised fibres resulting from staining or bleaching and stiffened for sanding by the wash coat is quick and complete with a Sundstrand Sander. Takes much less time than the old hand-sanding method—grain structure is followed perfectly to give you a smooth level surface—because the Sundstrand has *Straight-Line Action*. Contact your local supplier or write today for useful wood-finishing information.

SUNDSTRAND

SUNDSTRAND AIR SANDERS

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PNEUMATIC DIVISION, ROCKFORD, ILLINOIS

Flexible, Clear, Water-Resistant Wood Primer

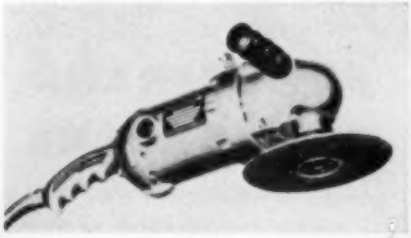
Rexton Finishes, Inc., 62 Woolsey St., Irvington 11, N. J., announces the development of Rex-Prime, the unique air dry clear wood primer and sealer. Designed for application as a first coating on wood surfaces, it gives powerful adhesion to subsequent coats and eliminates "scratching white" even when film is roughly abraded.

Rex-Prime may be applied on open or close grained woods before or after the filler is applied. In addition to excellent adhesion, it forms the foundation of a strong water-resistant final finish.

Portable Disc Grinding, Sanding, Wire Brushing

The Holt Whirlwind Spinner illustrated here is a powerful portable disc machine that can be used for a variety of grinding, sanding and wire-brushing jobs where these operations are desirable for cutting, smoothing or cleaning in preparation for painting. The motor is rated at ¾-hp. and operates from a 115-volt current.

The Holt Whirlwind Spinner can be used with 7 or 9-in. Flexholt reinforced sanding disc pads. The side handle is detachable for easy right or left-hand use. The Spinner weighs 14-lbs., and its length without pads is 18-in. The no-load speed is 4200-rpm. It comes with a 7-ft. cable with plug, sanding disc wrench, and ring for suspension (for long jobs). A product of Holt Mfg. Co., 651 20th St., Oakland 12, Calif., or 272 Badger Ave., Newark 8, N. J.



Handle changeable for left hand operator.

Pneumatic Acid Pumps

A safe and efficient device for handling acids and other liquids, a pneumatic bulb type acid pump, is obtaintable from the Hanson-Van Winkle-Munning Co., Matawan, N.J. The primary feature of this plating room "widget" is the reduction in fumes which it effects.

By the use of this pump, it is possible to fill bottles with small neck openings without the use of a funnel. The stream of acid is smooth and absolutely free from spurts from start to finish. The action is much faster than a siphon, as it puts the proper pressure on top of the liquid to force it out of the continuous tube. No dangerous air pressure is generated inside the carboy.

Acid-Alkali Resistant Coating

"Steelsaver," a high-gloss, coal-tar protective coating, which has been field tested for the past 12 years, under numerous corrosive conditions, is now being produced in quantity, according to an announcement by Continental Coatings Corp., 304 E. 44th St., New York 19, N.Y.

Steelsaver is one of six coal-tar base, anti-corrosive coatings formulated to protect metals, woods, masonry and insulations. These coatings form a tough, elastic film which resists the penetration of chemicals,

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Every pound of ketones you use s-t-r-e-t-c-h-e-s your ability to formulate high-quality lacquers.

Ketone solvents permit the use of greater quantities of low-cost diluents without lowering quality.

At the same time these powerful ketone solvents give you the lowest viscosity formulations when used with any practical resin-nitrocellulose combination.

Your Shell Chemical representative will gladly point out just how you can profit by the competitive advantages of Ketone formulations.

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fumes, moisture and heat. They are non-soluble in oil and are completely waterproof. All have been tested and proven in a variety of industrial uses.

No primer is needed. "Steelsaver" may be dipped, sprayed or brushed. It dries dust-free to a high gloss in less than three hours. It maintains its protective properties in dry heat up to 500° F. For better protection, two or more coats may be needed.

Metallic Bronze Lacquers Simulate Plated Metal

A new line of Metallic Bronze Lacquer finishes, offering substantial improvement over earlier formulations of this type, is announced by National Lacquer & Paint Co., Inc., 7415 S. Green St., Chicago 21, Ill. The new line is for the industrial trade.

Fifteen shades are included in the standard line, with other colors supplied on special order. Standard colors include various shades of Old English, Antique, Statuary, Gold, Copper, Brass, etc. All of these are designed to simulate closely the appearance of plated metal.

No dyes or bronze powders are used. Particle size is controlled by selection of raw materials to give maximum luster and reflectivity. Complete dispersion of pigments is obtained through patented processes.

Color and reflectivity are always the same when viewed from any angle. The manufacturer claims the products to be non-caking, non-jelling and relatively free from settling-out difficulties. All colors are light-fast and non-fading.

According to the manufacturer this new line of Metallic Bronze Lacquers offers manufacturers and product designers an acceptable alternate method by which they may closely simulate plated effects, while enjoying the advantages in fast production schedules and low costs.

Rubberizing Tank Interiors

Natural or synthetic protective coatings for metal or wood parts and products, to provide protection against corrosion or abrasion, is a service offered by American Rubberizing Co., 617 - 11th Ave. South, Minneapolis 4, Minnesota. Equipment so bonded lasts longer, reduces plant shut-down, and decreases maintenance costs. All work is done at the company's Minneapolis plant.

Coatings, either dipped or sprayed, may be applied to any type equipment, inside or out, regardless of size, shape, use of quantity. Various applications include tank and chute lining, parts dipping, plating racks, screens, etc.

American Rubberizing also processes canvas and cotton knit gloves with natural rubber, Neoprene or plastic.

Spraying Neoprene (synthetic rubber) inside a steel tank to be used for nickel plating. Thickness of coating ranges from 3/16 to 3/8 in. This synthetic rubber lining makes the tank resistant to acids and corrosion.

"Paw sez ef VEDOC Defense Paint is good fer Army bombs an' rockets it should be jest right fer corn-squeezin's."

We don't go along with Paw's use of *Vedoc* Defense Paint here. But for Defense Contracts you have—or may get—our government specification finishes will fill the bill. Our World War II experience, combined with postwar research and increased facilities, enables us to offer you the best in Defense Paint. Your orders receive our prompt attention—whether they're for gallons or drums. Write today for samples and prices!

Remember, Ferro Is Set Up to Provide Complete Organic Coatings Service. From the Development of Diversified Protective Coatings—to the Designing and Installing of Efficient Finishing Oven Systems.

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LIQUID PLASTICS DIVISION

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Vedoc

Fast Steam-Jet Cleaning

Livingstone Engineering Co., 100 Grove St., Worcester 5, Mass., announces a new steam-jet cleaning unit to be known as "Speedyjet", designed to make available to companies who have ample high pressure steam supply, the merits of the Speedyelectric system of steam-jet cleaning. The unit includes a high pressure detergent tank mounted on a light weight all-metal dolly, with necessary hose.

In operation, the Speedyjet tank is filled with detergent or solvent and steam is admitted in the top of the tank to put the liquid under pressure. Detergent flows from the bottom of the tank through the detergent hose to the lance where it is atomized with the steam and directed at jet velocity, under finger-tip control of the operator, against the object to be cleaned. Solvent, detergent or paint stripper can be applied either alone or mixed with steam in any desired proportion. This results in rapid cleaning.

Marine Aluminum Paint

According to a bulletin released by Richmond Marine Compositions Co., 708 Van Duzer St., Staten Island 4, N.Y., the latest development in metal protective coatings, as tested by the Aluminum Co. of America and the National Lead Co., is a combination of aluminum pigment with potassium-barium chromate.

Innox-Aluminum is an active rust-inhibitor, due to soluble chromates;

Some of the Maas & Waldstein executives, suppliers and guests who attended the 75th Anniversary Dinner at the Essex House, Newark, on January 7. Front row (left to right): Franklin Fader, President Franklin Fader Co.; M. S. Kaye, Plant Engineer, M.&W. Co.; B. F. Ames, General Sales Manager; Dr. Gustave Klinkenstein, President; R. F. Magnus, Treasurer; Gustave Weidenmeyer, V.P. of National Newark & Essex Banking Co.; Irving Gumb, V.P. of N. J. Chamber of Commerce.

Back row: Casper Apple, Resident V.P. of Haskins & Sells; J. B. Weisel, Asst. to the General Manager, Hercules Powder Co.; M. H. Corbin, V.P. of New York Paint, Varnish & Lacquer Assn.; E. E. Hoffman, Director of Industrial Finishes Div., National Paint, Varnish & Lacquer Assn.; D. H. Litter, President of D. H. Litter Co.; M. Flaumenhoft, President of C. J. Osborne Co.

RONCI SPEEDIP WHIRL ENAMELER

Made in Two Sizes, R-100 and R-200 Capacity 312-cu.in. and 1206-cu.in.

IDEAL FOR LACQUERING AND ENAMELING SMALL PARTS UP TO 7-IN. IN LENGTH

CUTS COSTS, SAVES UP TO 80% OF MATERIAL

Carries up to 75-lbs. per load, and up to 30 loads per hour can be coated with lacquer or enamel in these machines.

All operations are within the machine. Dipping tank is raised, submerging the parts in the basket, and then lowered and the parts whirled, throwing off excess material. No additional outside tanks required; no cleaning necessary when changing colors; no loss of material.

PROMPT DELIVERIES

Write for further information and submit samples to be coated.

RONCI MACHINE COMPANY

A Division of F. Ronci Co., Inc.

2 ATLANTIC BOULEVARD CENTREDALE 11, R. I.

and a weather resistant finish coat, due to its high aluminum content. It can be used as a primer or as a finish coat; it is neither red nor yellow, as most standard primers, but has that finished aluminum appearance. It dries in about four hours and is rust, weather, oil and grease resistant. It may be applied by either spray gun or brush.

Totrust Instant Dry Primer

The Wilbur & Williams Co., Greenleaf & Leon Sts., Boston 15, Mass., announces a new member in its Totrust (Totrust Stops Rust) family. Totrust Instant Dry Rust Inhibitor Primer is a penetrating metal primer that dries rapidly to allow re-coating in from 10 to 30 minutes, with any standard type of paint.

Naturally, all loose rust should be brushed off the surface before the primer is applied. Then there will be no chipping or peeling of the paint. This primer has excellent adherance to the surface to which it is applied and it halts the spread or formation of more rust.

Plastic Film Tape

Two specialized plastic film tapes are announced by Minnesota Mining & Mfg. Co., 900 Fauquier St., St. Paul 6, Minn.

Both new tapes—"Scotch" brand pressure-sensitive tape No. 480 (polyethylene film) and No. 490 (Saran film)—are designed for special package and bottle sealing jobs. The tapes are recommended for jobs requiring a low moisture - vapor - transmission rate.

The polyethylene tape has a maximum elongation of 700%, and excellent low temperature flexibility. Its

backing is resistant to a wide range of solvents.

Though available nationally, the polyethylene tape is available only to firms holding defense contract priorities, the producer pointed out.

It is made in 36-yard rolls, and in widths from ¾ to 22-inches. Only transparent is available at the present time.

The Saran film tape includes additional features such as excellent sheen, availability in various colors on special order, and excellent conformability with a thin backing.

Liquid Blast Cleaning

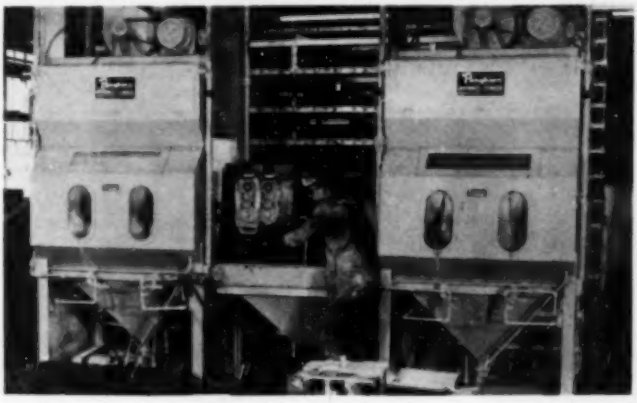
Hydrofinish is the name applied to the method developed by the Pangborn Corporation, Hagerstown, Md., for the liquid blast cleaning and finishing of dies at Rockford Drop Forge Co. In this process, the surface is blasted with a high velocity stream of nonmetallic abrasive particles suspended in a water solution. As the suspension is delivered to the nozzle by a circulating pump, velocity is imparted by compressed air. Particle size of the abrasive may be varied from 60 mesh to 5000 mesh equivalent. When the finer meshes are used, there is no breakdown of sharp edges or corners on the pieces being polished. With extremely fine mesh abrasives it is possible to process precision machined parts and hold within tolerances of 0.0001-in. where required.

The versatility of liquid impact blasting has led to its use also for the removal of grinding lines and for improving the useful life of dies for glass, rubber, plastics and other materials.

New Pressurized, One-Quart Fire Extinguisher

It Aims Like a Gun! With trigger-quick action, it hits the target instantly. Discharges vaporizing liquid. It is compressed air expelled—no hand pumping. It can be operated with one hand and is easily recharged and can be readily pressurized with any standard air chuck exerting 150-psi; such as commonly used in gasoline service stations.

It is for class B and C fires in motors, autos, aircraft, trucks, trailers, buses, motor boats, electrical equipment and all other risks involving small oil and grease fires. A product of the American-LaFrance-Foamite Corp., Elmira, N. Y.



The twin-cabinet hydrofinish installation at Rockford Drop Forge Co., with a track and loading car between the cabinets. In the cabinet on the right a coarser abrasive is used quickly to accomplish the bulk of the heat treat scale removal job; and in the left hand cabinet a finer abrasive imparts a high finish to the dies.

COMPLETE FINISHING SYSTEMS

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ALWAYS CONSULT KOCH FIRST

A Koch-Engineered baking oven set-up in an auto body plant.

GEORGE KOCH SONS, INC.

EVANSVILLE, INDIANA

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When you need quality finishes, remember the name *New Period*. Here's an outstanding line you can depend on.

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- Sealers
- Lacquer Enamels—Flat and Gloss
- Synthetic Enamels

Write for 5 Gallon Working Sample at Drum Price
MANUFACTURERS OF FINE WOOD AND METAL PRODUCTION FINISHES

Corrosion Control Coatings

Where metal surfaces are exposed to the weather, sea water, steam, acid fumes or solutions, chemicals, etc., they require protective coatings of unusual adherence and durability. Ordinary finishes might last less than a week or at most only a few weeks or months under these severe conditions.

A line of coatings developed for such service is offered by Casey & Case Coating Co., P. O. Box 151, Maywood, Calif.

This firm has issued an illustrated bulletin (six pages 8½x11-in.) on vinyl plastic coatings which it manufactures for the control of corrosion on exteriors of steel, concrete, brick, formed block and plywood structures, and as a tank lining. Specific properties are given and a chemical resistance chart is included.

Coatings are so non-contaminating that they may be used in constant contact with delicate food processing; tough enough for use on railroad tank cars or sea going barges; effective against caustic sterilizing or cleaning agents, and unusually long lived.

Buffs Spoons Automatically

A surface finishing machine capable of simultaneous buffing of both inside and outside of spoon and fork bowls and similarly shaped small parts has been introduced by Clair Mfg. Co., 1008 S. Union St., Olean, N. Y.

M. J. Fernan, Sales Manager for Dolan & Co.

Mr. V. J. Dolan, president of V. J. Dolan & Co. (Industrial Finishes), Chicago, announces the appointment of Mr. M. J. Fernan as Sales Manager of the company.

What Tall Oil Is

A FEW OF THE major products from pine trees are houses and furniture, rosin, turpentine and pine oil, paper and paperboard, and a relatively new commodity, tall oil. Although tall oil constitutes only 2% or 3% of the pine wood used for paper making, there is a potential supply of about 150,000 tons per year. Formerly it was burned with "black liquor" from the paper - making process but the general shortage of fats throughout the world stimulated research for its recovery.

Its name started in Sweden as "tallolja" which is Swedish for pine oil. But this name is quite confusing because the English term, pine oil, refers to an entirely different material. In Germany the difficulty was overcome by calling it "tallol", a combination of Swedish "tall" for pine and German "ol" for oil. After crossing the Atlantic it seems logical that this should become "tall oil" since we would not call it pine oil.

Tall oil is now available in both crude and refined grades for use in paint and varnish, linoleum, soap, lubricants, mineral flotation agents and products for many industries. Efficient processes have also been developed to "split" it into its component parts which are chiefly fatty acids and high grade rosin.

And so, through efficient methods for the recovery of valuable products from former waste, many millions of dollars will be added to our national income each year. — *For Instance.*

Some of the Products Our Machines Now are Finishing

- Screw drivers, chisels, pliers, saws, wrenches
- Fine silver—knives, forks, spoons
- Cigarette cases and lighters, compacts, mirror and brush backs
- Surgical instruments
- Fan blades, flat iron sole plates, photogravure stock

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For flash removal to mirror finish . . a Clair Surface Finishing Machine may be the economical solution to your small product finishing problems. From the seven extremely versatile basic designs, a "custom-made" machine may be developed for your particular application. *Write for technical data.*

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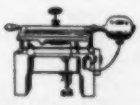

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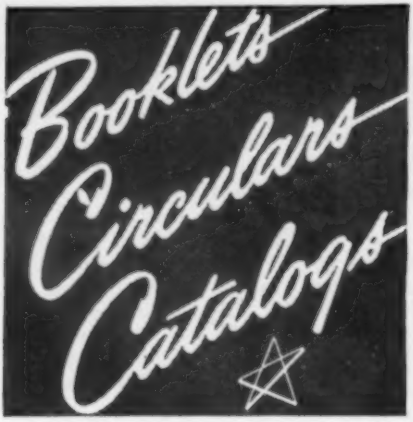

Despatch CF Furnaces

A 6-page folder printed in red and black illustrates and describes the latest Despatch cross-flow heat chambers for industry. Some models are especially suitable to use as laboratory ovens. For a free copy, write Despatch Oven Co., 619 S. E. 8th St., Minneapolis 14, Minn.

Corrosion Resistant Coatings

A new 8-page illustrated bulletin describes several new corrosion-resistant coatings which are useful for a variety of purposes in industry—for instance, for linings in tanks, piping, tubing, containers, etc. The coatings are highly resistant to salt, acid and alkali solutions, oil, grease, water, etc. Copy of the bulletin can be obtained by writing or telephoning Munray Products, Inc., 12500 Crossburn Ave., Cleveland 11, Ohio.

Electric Radiant Heater

Chromalox electric radiant heaters, in a variety of setups and arrangements for many kinds of industrial heating jobs, are illustrated and briefly explained in a new folder offered free by Edwin L Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Penna. Degreasing metal surfaces and the baking of paint and enamel coatings are included among the uses illlstrated.

"Paint Shop Digest" Free

A brand new and lively edition of "Paint Shop Digest" (eight pages illustrated) is offered free to automobile repaint shops by Industrial Tape Corp., New Brunswick, N. J.

The new edition explains how to reduce labor costs by the use of Permacel Masking Tape, and contains other practical hints for paint shop personnel. It features late news of interest to autobody men and refinishers; suggests new applications for Permacel Masking Tape, including use of the tape as an aid to finding fire extinguishers. Copies of "Paint Shop Digest" may be obtained by writing to Industrial Tape Corp.

Report on Hot Spraying

A new booklet containing 20 pages 8½ x11-in., bound between heavy paper covers, reveals authoritative information about hot-sprayed application of lacquer, as obtained and presented by technical and practical men of the Hercules Powder Co., Wilmington, Delaware. It is called, "Report on a Study of the Hot Spray Application of Lacquer".

Dualheet Paint Heater

A 4-page illustrated folder, printed in black, red and aluminum, describes and illustrates the Dualheet paint and air heater manufactured and sold by The Beck Equipment Co., Cleveland 2, Ohio. The merits of this equipment and the hot spray method of applying finishing materials are featured in this literature

Solvent-Emulsion Cleaners

A folder which describes a series of emulsion cleaners which have been designed to remove both oil-soluble and water-soluble soils from any metal or alloy, without attacking the base metal, and harmless to most paint finishes, has been issued by the Detrex Corporation, Box 501, Detroit 32, Michigan.

Better Planned Lighting

A new 4-page RLM Bulletin 1050, contains a complete listing of all RLM manufacturers and the RLM certified lighting equipment made by each. It is an indispensable aid to those who buy, sell, recommend or specify industrial lighting equipment. Copies of this new bulletin are available without charge from the RLM Standards Institute, 326 W Madison St., Chicago 6, Ill.

Color Names Dictionary

Container Corporation of America, 38 S. Dearborn St., Chicago 3, Ill., announces publication of a Descriptive Color Names Dictionary as a 64-page supplement to the Company's Color Harmony Manual. The Dictionary contains 775 names so arranged that the user can work from names to colors or, conversely, from color to names. All of the names are the kind

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Creates new life in wood

- **It is the Modern French polish**
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No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up.

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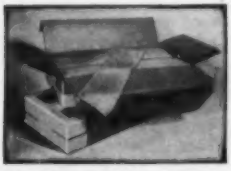

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A WARRANTY OF SATISFACTION IN EVERY CARTON

Positive action of BARRETT TYPHOON CENTRIFUGAL WASHERS provides for quick, thorough parts cleansing

In these efficient centrifugal machines the washing solution enters the top of the whirling load under valve control. The operating principle—being that of a typhoon—gives the washing solution a spraying, swirling, and surging action which thoroughly permeates the contents. During this action, centrifugal force creates hydrostatic pressure within the work container. That proportion of the deluge going to the bottom is forced up the side and out carrying off the contaminated fluid.

A thorough, quick cleaning is definitely assured by flowing sequence. Two or more liquids may follow, making it possible to wash, rinse or provide any further treatment as required.

Several Barrett installations involve the use of four machines operated by one man who loads and unloads in three minute cycles. Washing time is only one minute. Another type of set-up provides for recovering oil, washing, drying, and coating with rust-proofing material.

As in all Barrett Centrifugal machines, provision is made for convenience and safety of operation.

Send at once for details of Barrett Typhoon Washer

THE LEON J. BARRETT COMPANY

Designers and Builders of Centrifugal Machinery

1703 GRAFTON ROAD WORCESTER 1, MASS.

commonly used to describe the color of merchandise sold in the mass markets. Special promotional words invented for private brand merchandising are not included.

Helen D. Taylor and Lucille Knoche, well known colorists, collaborated with Walter C. Granville for six years in preparing the new Dictionary. Its purpose is to enable merchandisers to describe the colors of products in terms that the general public will quickly understand.

Manufacturers of paints, tiles, floor coverings, and other building and home furnishing materials will find the book valuable in naming the colors shown on swatch cards and in sample kits. It is only necessary to select matching color chips from the Manual and then find the names in the Dictionary which correspond to the notations on the chips. Similarly, when a customer asks for merchandise in a certain color by name, the supplier can use the Dictionary to locate chip in the Manual which corresponds to that name

Automatic Plating Machines

Publication of a new bulletin describing the entire line of Udylite Automatic Plating Machines is announced by L. V. Nagle, vice-president and sales manager of The Udylite Corp., Detroit 11, Mich.

This 12-page, 2-color booklet illustrates and describes the Udylite Full Automatics, single-row, double-row, overhead return-type, rotary and other models, as well as the famed Udylite Junior and the Udylite Semi-Automatic. Brief descriptions of these units are given along with an outline of the Udylite service policy and pertinent information concerning the construction of Udylite machines.

Booklet of Beautiful Churches

Churches the world over stand as universal monuments to the aspiration born in man with the dawn of civilization. They are a thing apart from ordinary structures. Of particular concern, therefore, to religious hierarchies, church governing boards, and building committees, no less than to architects, engineers and contractors, will be the new pictorial booklet "Churches", just published.

Compiled by the Timber Engineering Co., an affiliate of the National Lumber Manufacturers Association, this photographic brochure is devoted to representative examples of church buildings constructed of timebr in all parts of the United States.

The new booklet "Churches" presents eloquent testimony, in a series of 84 illustrations, to the efficiency, economy, and graceful beauty which may be attained by the use of three practical and proved methods of wood construction. The

Timber Engineering Co. presents this pictorial bulletin as an aid to the billion-dollar church building program that is currently being planned throughout the world. It is free upon request to the Timber Engineering Co., 1319 Eighteenth St., N. W., Washington 6, D. C.

Hot Lacquer Survey

Who uses hot-spray lacquer and why? Hercules Powder Co. (Cellulose Products Dept.) wanted to find out factual answers to the above questions, so it sent out 325 questionnaires to users. What was learned from the replies is summerized in a 12-page bulletin printed in red and black. It is interesting and informative. Send to the company at Wilmington, Dela., for a free copy.

Neoprene Maintenance Coating

Resistance to moisture, heat, fumes, acids and oil is claimed for a new air-drying liquid-plastic protective coating developed by Gates Engineering Co., P. O. Box 1711, Wilmington, Dela. It can be used on steel, wood or concrete. For clean surfaces no prime coat is required. A free bulletin gives the essential information.

Booklet Describes New Lacquer For Molded Polystyrene

New England Lacquer's newest development, an improved polystyrene finish with high gloss and strong adhesion, is described in a new booklet. The new booklet describes the improved characteristics of this new lacquer in an outline form which makes it easy to evaluate. A copy is available free by writing New England Lacquer Co., Dept. 1A, King Philip Road, East Providence, R. I.

Versatile Cleaning Compound

A Multi-purpose cleaning chemical, identified as Detrex 10, is described in a new folder being distributed by the Detrex Corporation, Box 501, Detroit 32, Michigan. This compound may be used as a medium-duty soak tank cleaner; electrolytic cleaner for ferrous metal parts; and as a water conditioner for all types of water-wash paint spray booths.

How to Select and Apply Industrial Paints

How to properly select and apply paint and paint products for industrial use is the subject of a 12-page booklet recently published by James B. Sipe & Co., Pittsburgh, Penna., paint manufacturers and

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WOOD BLEACH

This single operation, controllable, Patented Bleach

- **Requires No Neutralization**
- **Does Not Raise the Grain**
- **Leaves No Deposit**
- **Wood Is Left Neutral**
- **Economical . . . Dependable**

Gallon Unit makes two gallons of bleaching solution. Application by spray or synthetic rubber sponge. Wood is ready for finishing in less than two hours.

Delivered prices quoted on request.

Spe-de-way **Products Co.**

manufacturers

3639 N. Columbia Blvd., Portland, Ore.

engineers. The 8½x11-in. pages are bound between heavy paper covers printed in black, red and green.

This booklet contains complete information for application of primers and finishes to transformers, circuit breakers, transmission towers and structural steel. Spreading rate, drying time and methods of application are specified for each type of coating. Various types of preservatives are recommended for wooden structures and fabrics, such as awnings, fire hose and tarpaulins. Waterproofing and concrete sealing coatings, their application and merits are also discussed.

Free Book on Dust Control

Detailed selection, operation and maintenance data for the plant engineer responsible for dust control is contained in a 50-page digest-size book entitled, "Industrial Dust Control Through Exhaust Systems". Illustrated with 15 photographs and 10 line drawings, the book treats, in three major sections, 1) Exhaust Hoods and Piping Systems, 2) Dust Collecting Equipment, and 3) Exhausters and Drives.

Copies of the book may be obtained free of charge from the Pangborn Corp., Hagerstown, Md.

Chemical Resisting Protective Coatings

A new 4-page illustrated bulletin describing five groups of chemical resisting Ucilon Protective Coatings has been made available by United Chromium Inc., 100 E. 42 St., New York 17, N. Y. Described are coatings based on vinyl resins, phenolic resins, fish oils, chlorinated rubber, and also water emulsion coatings. The coatings are resistant to acids, alkalies, petroleum and its derivatives, water, oxidants, salt solutions, alcohols, and many solvents.

Treatment to Improve Glue

For concerns that use animal or vegtable glue in wood and veneer gluing, a treatment to improve certain features of these glues is called "Glue-Rite No. 20", manufactured and sold by The Liquanil Mfg. Co., 823 Richard St., Dayton 3, Ohio.

The manufacturer publishes an informative folder which tells how to prepare the treatment for addition to regular glues, what results it produces, how to test glues before and after adding Glue-Rite, the use of glue sizing to prevent warping, how to treat stubborn cross-grain veneers to flatten them and make them workable, etc.

NEW! NEW! NEW!

The Science of Wrinkle Finishing

A SINGLE COAT FINISH

A Sure Guide To More Efficient and Cost Reducing Industrial Finishing

The first fully authoritative book covers modern Wrinkle finishes from all angles . . . It tells in layman's language, but technically correct, what the formulator must do to produce a soft, suede-like finish, or a high metallic gloss.

The "Science of Wrinkle Finishing" is well illustrated, in color and black and white. Both actual size and magnified photographs are included to show the many variations of textures possible to attain with these one-coat finishes. Preparation of the surface (little or none is needed with "Wrinkle" finish, making it the most economical industrial finish), spraying, drying and baking are all described in full. The application to flexible materials such as paper, fabrics and wood are also dealt with and described clearly.

Technical data on polymerization and on drying oils, not heretofore available, are given special attention.

A BOOK WHICH INDUSTRIAL FINISHERS HAVE BEEN WAITING FOR

SOME OF THE SUBJECTS COVERED:

ORIGIN OF WRINKLE FINISH

How it was started
How to control characteristics
What is "crystal" finish
What is crystallizing lacquer

SPECIAL PATTERN FORMULATIONS

How to make patterns
How to blend for formulations
Where are various finishes used
What oils are used for different formulations

APPLICATION

How to apply "Wrinkle"
What temperature to use
What equipment necessary
How long to bake
What are the controlling factors
What is the most effective means of application
What is the viscosity of oils for applications
How to attain the finish desired

TABLE OF CONTENTS

Part I
1. Origin of "Wrinkle" Finishes
2. "Wrinkle" Pattern, Texture and Gloss
3. Color in "Wrinkle" Finishes
4. Physical Characteristics of "Wrinkle" Finishes
5. Surface Preparation for "Wrinkle" Finishing
6. Application of "Wrinkle" Finishes
7. Baking of "Wrinkle" Finishes
8. Flexible and Air Dry "Wrinkles"

Part II
9. Ingredients and Processing Equipment
10. Tung Oil Formulations
11. Castor Oil Formulations
12. Officica Oil Formulations
13. Linseed Oil Formulations
14. Perilla, Fish & Soy Bean Oil Formulations
15. Synthetic Resin Formulations
16. Asphaltum and Blown "Wrinkle" Formulations
17. Special Pattern Formulations
18. Air Dry & Flexible Formulations
19. Pigmentation

APPENDIX A:
Outline for Polymerization in drying oils
APPENDIX B:
Summary of "Wrinkle" patents
GLOSSARY OF TERMS

Price $5.00 (Money Back Guarantee)

INDUSTRIAL FINISHING Magazine

1142 North Meridian Street **Indianapolis 4, Ind.**

Industrial FINISHING Editorial

Paint Specifications, U. S. Government

Twenty-seven different U. S. Government agencies, from Air Force to Veterans Administration, each with paint specifications identified by a code of letters and numbers, sometimes complicates things for those who have anything to do with the manufacture, sale, purchase, use or servicing of industrial finishing materials. This situation is of vital concern to more people and firms now that our enlarged National Defense Program is getting under way.

A key to these Government agencies and their respective specifications has been prepared and published by the U. S. Industrial Chemicals, Inc., 60 East 42nd St., New York 17, N.Y. Only three easy-to-read pages, 8½x11-in., are included in this time-saving code identification index. Pages two and three reveal where and from whom to obtain each Government agency's specifications.

The information in these three pages is abstracted from U. S. Government Paint Specifications Circular 743, compiled by the National Paint, Varnish & Lacquer Association, 1500 Rhode Island Ave., N.W., Washington 5, D.C.

In the U.S.I. Resin News, Volume XV, No. 1, the folowing paragraphs reveal further information of interest about Military Paint Specifications:

"In spite of the comparatively short time that has elapsed since we were all familiar with the complexities of the specifications system, many changes have been made. Chief among these, is the grouping together of numerous military branch agency specifications under one military code as either "MIL" (Military) or "JAN" (Joint Army Navy). In most cases this has been accomplished by issuing a cover sheet with the new code designation number without changing the actual requirements of the paint material involved. In addition, the government has issued several entirely new specifications.

"All of these changes are part of the unification program. We hope that when it has been completed this will simplify the protective coatings specifications setup. In the meantime, it will probbaly mean extra confusion in our industry until such time as the manufacturers have familiarized themselves with the new system."

Substitutes Call for Change of Finishes

Many manufacturers of civilian products face the hard fact that certain materials for making their products are either no longer available or in too short supply. They must switch to something else. For example, some lamp manufacturers are turning to wood, paper, composition materials, etc., for lamp bases and reflectors, where formerly they had a wide choice of materials well suited to any requirement or preference.

Naturally, this kind of a switch in hard materials calls for the adoption of finishes and methods of finishing that are new to them. Equipment may have to be changed and probably different supplies will have to be pur-

If Finishing "Specs" Trouble You,

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DEFENSE ORDERS are boosting the need for finishes that meet government "Specs." And Zapon *Service From Every Angle* can help you set up your finishing department to fulfill your government contracts with speed and economy.

There's more to the job than providing finish that meets "specs" in the drum! The complete job must measure up. That calls for finding the right answer to questions involving surface preparation, finishing procedures, drying or baking.

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Specialized Production Finishes

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CARLSTADT, NEW JERSEY

chased and used. Here is where the man who knows a lot about several different kinds of finishing can be of tremendous value to the organization. He may be the firm's own superintendent or finishing foreman. More often, perhaps, the most available expert will be one of the well informed finishing engineers attached to a concern that supplies finishing materials. Or it may be an independent finishing consultant who is available to come in and work with the company until after the changed setup is working smoothly and efficiently.

Fortunate indeed is the concern that can make these changes in production with a minimum of costly mistakes and spoiled work, and then emerge with a setup that is reasonably simple, economical and efficient. Long range planning is desirable before launching into such a change. Temporary makeshifts are likely to prove unsatisfactory—not economical with materials, supplies, equipment, manpower, time or floor space.

Remember, a production setup, once it is placed in operation, can produce profits or result in losses. Better spend more money for a correctly engineered change-over in the first place than to skimp at the beginning and then end up with something that proves to be too costly every minute it operates.

Guard Against Saboteurs

More modern protective lighting techniques should be adopted at once by American industry to protect the nation's plants against the danger of sabotage, warns Mr. Dana W. Rowten, Westinghouse Electric Corporation.

Speaking at the recent New York joint meeting of the Illuminating Engineering Society and American Institute of Electrical Engineering, he em-

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BETTER FINISHES AND COATINGS, INC.
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phasized that U. S. industry is an enemy's number one target.

To reduce danger of sabotage, Mr. Rowten advocated a "find 'em, blind 'em" lighting technique that floods light on the would-be saboteur while blinding him with glare. He listed four basic jobs of protective lighting: 1) discourage attempts at entry; 2) make detection a certainty should entry be effected; 3) aid the guard and hinder the intruder in every possible way; 4) provide complete reliability.

Mr. Rowten stressed importance of a carefully engineered protective lighting system. Failure of a single light should not leave a dark vulnerable spot. "Overlap of coverage" avoids such vulnerability. Also, he added, power supply, wiring, and control equipment should be arranged for complete reliability and safety.

Reproduction of Wood Grain on Glass

★ Using a copper graining plate and a synthetic rubber roller, a flawless and strikingly attractive grain effect, in any color or combination of colors, can be put on glass—using either single, double strength or plate glass. Glass does not absorb the finishing materials or printing inks, consequently the grain reproduction on glass is clearer and more realistic

---

★ *Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those used.*

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than it will be on wood or other absorbent material.

In past years, most of the glass graining was done by using photographic silk screens. This was necessary because of the speed element and the fact that silk screening glass tops was much more economical. With the advent of automatic graining operations, perfect reproductions can be made without sacrificing speed or production costs.

In graining glass tops, the process is exactly the opposite of what it is when graining wood, metal or any other non-transparent material.

1) The first operation is the graining. Special inks must be used for glass.

2) Application of the ground coat, which gives background color to the grain.

3) Seal coat. Used to make the grained finish impervious to scratching and spilled liquids.

Any color combination can be used and, by employing masking processes, any manner of inlay effects can be produced.—*William B. Leil.*

Some Spec. Paints May Be Improved

★ With our country being committed to an "all out" military preparedness program, industrial manufacturers will, in steadily increasing numbers, be called upon to make various products that will require the use of specification paints.

During World War II, paint manufacturers found that many of these specifications, while giving the properties and durability desired by the military authorities, did not meet the

production line requirements of the user of coating materials, either in application properties or drying or baking properties.

In many instances, the paint manufacturer appealed to the proper agency, secured an authorized waiver and made the necessary adjustments to suit his customer's requirements without impairing the ultimate paint film.

The industrial manufacturer using paint materials should not hesitate to call upon a reliable paint company to help him work out his painting problems so as to give Uncle Sam what he wants in the shortest possible time.—*Louis E. Martin.*

Find and Reduce Wastefulness

Waste can never be entirely eliminated but it can be controlled and reduced. Never has there been a more appropriate time than right now to start a waste elimination program in industry. Hurry and volume production and high prices can and do produce waste in many places.

A complete, well rounded and systematic program of waste elimination will produce results. An effective program will include observation, careful inspection and study by crews of experienced men who are definitely assigned to various departments of each establishment. The executive branch of the business and the office, as well as storage, production and shipping departments, should all receive the same searching investigation.

Crews should be instructed to find waste wherever it exists, regardless of its location and who may or may not be responsible for it. All employes should be informed of what the program is to accomplish, to gain their cooperation. Also, employes should be impressed with the fact

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that the investigation to find sources of waste is not a witch hunt for showing up any individuals or groups of employes, or any department.

After written reports are turned in, management should hold meetings with department heads and with foremen present to act on the findings of the waste elimination crews. Finally, the most important part of the entire program is to act upon and follow through to completion on all reported sources of waste that can be reduced or eliminated. Without effective action the program will fail.

Paint Chemists Busy Reformulating

★ Critical eras, through necessity, bring periods of abnormally rapid research and development. The present "Arm for Defense" emergency is no exception to the rule, since raw materials for civilian goods are, in many cases, already in short supply.

The drastic curtailment of cobalt drier has forced the paint chemist to make a restudy of the drier ingredients in his products. As a result he has formulated low cobalt combinations to equal or improve on his old ones, both from a standpoint of quality and cost. In some cases, however, new driers are more expensive and in still others, the cobalt has been so far impossible to be lowered. However, in the majority of the cases, it has been found that the cobalt can be materially reduced.

The high cost and unavailability of China wood and dehydrated castor oil is forcing a return to the study of softer oil varnishes. Many varnishes will be made and kept in use even after the critical period is over.

All in all, it looks like a busy time for the paint chemist who will be under almost constant pressure to reformulate fast enough to keep production going.—*M. E. L.*

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How NSTP Prevents Product Failures

In this period of sales competition, of widespread design improvement and paring of production costs, a dependable means of determining the shipability of new products and packages is of real importance. Accurate determination of a newly-designed packaged-product's ability to successfully stand the hazards of normal handling and shipping can save a company thousands of dollars and preserve both its own reputation and that of the product it launches on the market.

The National Safe Transit Program is designed to perform just such a service for manufacturers of finished-metal goods. It has already proved valuable to many of the cooperating companies which have adopted the pre-shipment testing procedure recommended by the National Safe Transit Committee.

One manufacturer, for example, was preparing to market a new model refrigerator. Before a single unit had been shipped, Safe Transit tests revealed that under normal shipping and handling conditions the bolts in the condenser mounting would loosen, causing the motor to drop out of position and therefore prevent the refrigerator from operating. Safe Transit tests enabled the company's engineers to discover and correct the weakness in time to prevent failures in the field.

In another company's experience, Safe Transit tests showed a structural weakness in the frame of a newly-designed washing machine. Changes in welding procedure and support bolts corrected the defect, and field reports indicate that damage to the machines on arrival is negligible.

A third company, which had already launched a newly-designed

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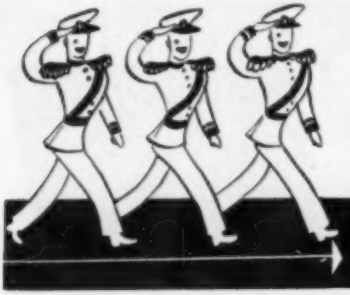

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range, found that 10% of the new units were arriving at distributor warehouses in severely damaged condition. When the pre-shipment testing equipment recommended by the Safe Transit Committee was installed, the company was able to pin down the cause of damage so that it immediately dropped to 2% and continued to improve. If Safe Transit equipment had been on hand in the beginning, this catastrophe would never have occurred. Now, this same company continually spot-checks its production runs according to Safe Transit recommendations, and every suggested change in the material or design of any product or package is similarly checked before acceptance is considered.

All manufacturers of appliances, appliance parts, or other finished-metal products may obtain full information on Safe Transit from the National Safe Transit Committee, 1010 Vermont Ave., N. W., Washington 5, D. C. The Committee is a group of industry experts representing shippers, carriers, industry trade associations, package engineering firms, and commercial testing laboratories. These men have freely volunteered their time and effort in order to help to solve the problem of excessive handling and shipping damage to finished-metal goods. Their help and advice are available to all manufacturers who would like to know more about what Safe Transit is and what it can do.

Michigan Abrasive Co., Detroit Announces Personnel Changes

Mr. C. H. Wills has been advanced from General Sales Manager of the Michigan Abrasive Co., Detroit, to Director of Sales for the firm.

Mr. B. (Barney) S. Meade has joined the firm in the capacity of General Sales Manager. Mr. Meade was formerly Vice President of a file and tool company in Elizabeth N. J. He is well known to various trade organizations and in industrial circles throughout the country.

Have You Considered Plant Protection?

During the last war excellent plant protection techniques were developed. While it is not necessary for all companies to adopt and enforce such stringent measures right at the moment, it is imperative to at least examine the basic elements of plant security and to take the following precautions:

1) Determine the adequacy of your plant protection force or watchman.

2) See if there are areas of your plant or grounds that need floodlighting.

3) Check entrances, exits, and fences.

4) Review employment procedures to screen, investigate, and eliminate undesirable applicants.

5) Learn as much as you can about your employes. There should be no question about any employe's sound thinking and loyalty.

Fluid Abrasive Spraying

A new fluid-abrasive finishing machine, wherein abrasive mixed with water can be hand sprayed over products inside a cabinet, has been developed by Jewett Mfg. Co., 15614 Hasel Road, Cleveland 12, Ohio.

A description of the fluid-abrasive finishing machine and a list of uses are included in a new folder.

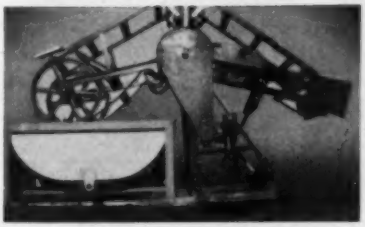
Maas & Waldstein Celebrates Its 75th Anniversary

Maas & Waldstein Co., Newark, N. J., started its fourth quarter century in the development and manufacture of industrial finishes, with a National Sales Meeting and a 75th Anniversary dinner at the Essex House in Newark, January 6 and 7. The affair was attended by company representatives from coast to coast, officials and their guests.

A special feature of the occasion was the presentation by Dr. G. Klinkenstein, President, of gold watches to four men for 25 years' service, and the awarding of a diamond ring to one man who had been with Maas & Waldstein for 50 years.

The company's main plant and executive offices are on the same Newark site

Dipping Machine



Special double compartment dipping machine suitable for wood or metal articles. Adjustable to handle many shapes and sizes. Each tank 28" wide by 64" long by 24" inches deep. Metal construction—gearhead motor drive.

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where the firm originally located in 1876. The concern now has plants in Chicago and Los Angeles, sales and engineering offices in 25 cities from coast to coast, and an international reputation for high quality products.

Western Metal Show

Technical sessions of the American Society for Metals at the Seventh Western Metal Congress and Exposition, March 19-23 (1951) in the vast Auditorium and Exposition Hall, Oakland, Calif., are being set up along lines to interest and assist the mechanical and other engineers of the West. Many of the most prominent metallurgical and mechanical engineers in this country will deliver papers.

Herman Hardesty Represents Star Chemical Co.

The Star Chemical Co., Inc., 4500 W. Cermak Road, Chicago 23, Ill., announces that effective January 1, Mr. Herman Hardesty began devoting his time exclusively to calling on the industrial trade in the states of Indiana and Michigan for Star Chemical Co. Mr. Hardesty offers his services to any accounts having difficulty in "patching problems" or general furniture and fine cabinet finishing.

Yarnall Sales Convention

The Yarnall Paint Co. held its annual Sales Convention at the Adelphia Hotel Thursday and Friday, January 4 and 5. Meetings were presided over by H. F. Swackhamer, Vice-President. Speakers included Wm. MacKnight, President, F M McNerney, Technical Director, John Flood, Plant Superintendant, and Horace Bentley, Sales Service Technician.

Part of the convention was held at the general offices of the company where the men were conducted through the plant and laboratory in groups and shown new plant and laboratory equipment and expanded plant facilities. Mr. Bentley demonstrated new industrial finishes developed during the year.

The new Yarnall Plan was presented, along with the 1951 General Sales and Advertising Program.

The convention closed with a banquet at which the Yarnall Champions of the Month and Year were introduced. Prize awards were made to S. C. MacKnight, Henry Hatton, George Parker, Robert Parker, Vernon Avery, George Freed and Ellis Thompson.

Service pins were presented to Henry L. Hatton for 20 years service and Ellis H. Thompson for ten years service with the compnay.

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Opening for man with synthetic enamel experience interested in sales development and technical service position in industrial finishes department. Supply complete qualifications if interested. MONSANTO CHEMICAL CO., Merrimac Division, Everett Station, Boston, Mass.

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1200 Gallons G-60-N-C-18 Dimenso Background Brown; 320 Gallons G-60-N-C-20 Dimenso Accent Brown. In new 55-gallon drums. Available immediate shipment. Advise best offer. NESCO, INC., W. H. Lohman, 270 N. 12th St., Milwaukee 1, Wisc.

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1 R. C. Mahon 12-ft. wash screen type spray booth and 10'x50' gas-fired insulated sectional paint baking oven, both with 180' monorail and power unit and controls.

1 6-stage R. C. Mahon Bonderizing system with paint dipping and stripping units, 220' monorail with power unit, dry-off and paint baking oven with controls. HARRY C. ALBERTS, 38 S. Dearborn St., Chicago 3, Ill. RA. 6-8664.

NEW! NEW! NEW!

Here is an informative and authoritative reference book of 386 pages that reveals the details of modern production finishing of furniture and other wood products. The author is G. L. Deniston, B.S. (Chemical Engineering), Director of Industrial Finishes Division of Commonwealth Engineering Co.

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Contains 18 chapters, with interesting illustrations. Information in "The Science of Modern Wood Finishing" is based on the latest materials, equipment, supplies and methods used in modern factories today. Many articles published in INDUSTRIAL FINISHING Magazine are referred to in the bibliography.

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INDEX to Advertisers

Advance Paint Co. ..... Third Cover
Allied Finishing Specialties Co. 47
Aluminum Co. of America 34-35
American Brake Shoe Co. 18-19
American Richwood Products Co. 118
Argenta Products Co. 120
Atlas Powder Co. 113

Balsa, Inc. 51
Barrett Co., Leon J. 108
Barker Chemical Co. 63
Baughn Chemical Products Co. 107
Bede Products, Inc. 43
Better Finishes & Coatings, Inc. 115
Binks Mfg. Co. 10-11
Blakeslee & Co., G. S. 31
Brown Co., Andrew 53

Capitol Machine Co., The 45
Carborundum Co., The 25
Clair Mfg. Co., Inc. 105
Classified Advertising 122
Clinton Co., The 109
Coast Paint & Lacquer Co., Inc. 93
Compo Chemical Co. 114
Cover, H. S. 116

Day & Co., James B. 85
DeBurgh Conveyors 82
Despatch Oven Co. 27
Detro Mfg. & Sales Co., Inc. 46
Dolan & Co., Inc., V. J. 5
Du Pont de Nemours & Co., E. I. 64-65
Duralac Chemical Corp. 8

Egyptian Lacquer Mfg. Co., The 91
Electrostatic Paint Spray Equipment Co. 117
Enthone, Inc. 1

Ferro Enamel Corp. 99

Glidden Co., The 16-68
Grand Rapids Varnish Corp. 2

Hammond Solvents Recovery Service 119
Hercules Powder Co. 73

Ideal Chemical Co. 119
Interchemical Corp. ..... Second Cover

Jensen Specialties, Inc. 9

Kirk & Blum Mfg. Co. ..... Back Cover
Koch Sons, Inc., George 103

Lawrence-McFadden Co. 89
Lilly Varnish Co. 14-15
Liquafill Mfg. Co. 120

Maas & Waldstein Co. 29
Mahon Co., The R. C. 54-55
Mansfield Paint Co., The 75
Mearl Corporation, The 17
Miracle Paint Rejuvenator Co. 121
Morrill and Renshaw, Inc. 117

National Chemical & Plastics Co. 79
National Lacquer & Paint Co. 120
National Paint, Varnish & Lacquer Association 20-21
Neilson Chemical Co. 33
New York Woodfinishers Supply Co. 104
Nikolas & Co., Inc., G. J. 81

Oakite Products, Inc. 46
Op-Al Electric & Mfg. Co. 86

Peiron Corp. 6
Perfection Paint & Color Co. 71
Potter Paint Co. 7

Qualatone Products, Inc. 107

Randolph Products Co. 114
Ransburg Electro-Coating Corp. 41
Reliance Varnish Co. 59
Rockford Varnish Co. 83
Ronci Machine Co. 101

Shell Chemical Corp. 97
Sherwin-Williams Co., The 12-13
Snyder Bros. Co. ..... Front Cover
Solvents Recovery Service 119
South Florida Test Service 86
Spe-de-way Products Co. 110
Spruance Co., The Gilbert 61
Standard Coating Corp. 109
Stanley Chemical Co. 36
Star Chemical Co., Inc. 87
Stille-Young Corp., The 118
Sundstrand Machine Tool Co. 95

Unifilm Paint Co. 110

Varnish Products Co. 47
Vol-U-Meter Co. 123

Wilkinson Equip. & Supply Corp. 6

Yarnall Paint Co. 77
Young Bros. Co. 119

got a finishing problem?

Want to go home, stretch out in your easy chair, relax and enjoy yourself? Then turn your finishing problems over to us. There's no point in taking a finishing problem home with you . . . not when you can get finishing experts to solve it for you in less time, and at less expense. That's our business—solving finishing problems and formulating the finish required. We've been doing this work for over half a century. So, next time you have a problem, just . . .

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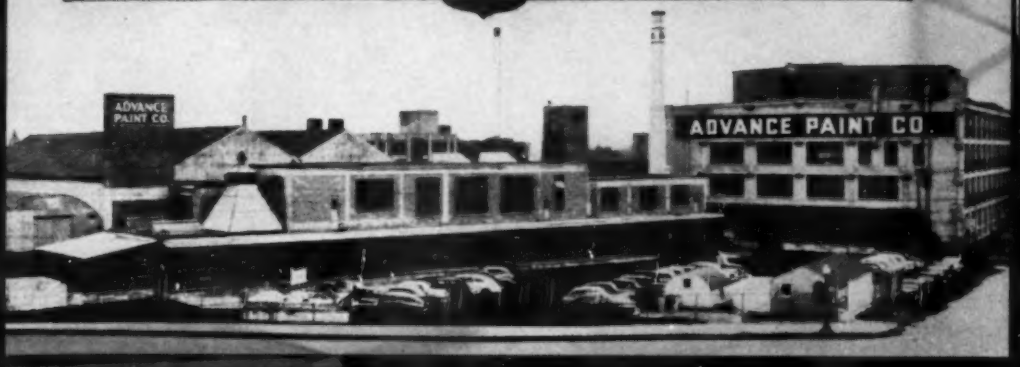

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At left: Electrically heated, automatically controlled oven for baking insulating varnish on coils, stators and other parts at Internat'l. G. E. Service Shop, Mexico City.

At right: Steam heated, 22 foot long oven for removal of moisture from paper filters used in acetate yarn manufacture at Tennesse Eastman Corp., Kingsport, Tennessee.

READY TO USE when they reach your plant, production-size ovens are built, tested and shipped complete from the KIRK & BLUM plant. Your production through the oven starts just as soon as necessary connections are made . . . there's no tie-up for erection, testing or adjustment in your plant. You save time, money and avoid production delays.

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